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*The Archæology of Homer.**

WHEN Dr. Schliemann laid bare the foundations of Hissarlik, high hopes were raised; these hopes we know were, so far as Homeric scholarship was concerned, doomed to disappointment. Something was added to our knowledge of barbarian races centuries before the days of Homer; but no necklace of Helen, no breastplate of Achilles, could reward the search. Happily this search did not end at Hissarlik; not only Mycenæ but Thera, Ialysus, Sparta, Athens herself, and, farther afield, Syracuse, Etruria, Latium, and the valley of the Po, have yielded up their buried evidence. We are conscious now that questions of Homeric terminology have to seek their answer not merely in textual criticism, but in the added witness of archæology; that the form of the "aspis" of Æneas, or of the "amphikupellon" from which Telemachos drank, may have to be determined by the buried relics of some hero's tomb at Cymæ or at Thera.

We are conscious of this, and most of us probably conscious of an unplesant vagueness in the matter of this archæological evidence, which makes us timid of opinion. We do not feel any assuring certainty what discoveries are legitimate for our purpose, what again are chronologically *hors de combat;* we know that we may not put our trust in the Troy of Hissarlik; we are not clear why we are allowed to put confidence in Dipylon vases, and other types from Etruria. We have been all waiting till some one should speak with authority on these matters, put in order the mass of scattered evidence, give us at least an approach to some chronological landmarks; in a word, establish some well-defined relation between the literary testimony of Homer himself and the archæological evidence of recent excavations.

This, in a masterly manner, Dr. Helbig has done in the book before us. His work falls into two parts. His object is to give as full and complete a picture as possible of the Homeric age, the dwellings of the Homeric heroes, their clothing, the jewels and adornments of their women, the arms of their men, the implements and vessels of their households, their decorative art. This is the second part of his work, but in order to make this picture real and reliable he has first to give a *résumé* of the evidence on which it is based, to summarise the material which has made the drawing of such a picture possible. In summarising this material he is necessarily obliged to pass in review all the excavations which have yielded objects which could in any way illustrate Homeric art or Homeric custom; he must give his opinion as to the date of these objects in order to show whether they may or may not be reasonably connected with Homer; he gives, therefore, incidentally a whole survey of recent archæological discovery. It is to this survey, rather than to its application in detail to Homeric technology, that we shall turn.

The "sources" (*Quellen*, as the Germans happily call them) of Homeric criticism are, of course, two-fold,—first, literary; second, monumental. As regards the art and industry of Homeric times, the literary sources are necessarily very inadequate. The poet describes what he is sure is familiar to his hearers; he wants just to recall to their minds a picture, to touch its salient points, hit off its characteristic features, not to describe with detailed precision: hence it is often difficult for us, to whom the object, be it beaker, shield, or necklet, is unfamiliar, to recover its outline; we have lost the clue. Works of art of classical date, vase paintings and sculptured reliefs, are of no service if they depict Trojan scenes. They do it in no historical spirit. Trojan heroes are clothed and armed after the fashion of sixth-century garb. The scholars of Alexandria are no help. Aristarchos and Dionysius Thrax, with all their critical acumen, never look for a moment to monumental evidence; indeed, Alexandria was a city barren of antiquities, as Dr. Helbig suggests. Had the ancient school of philology had its seat at Ephesus or Samos, or any site charged with historical association, we might have had some valuable help to archæological criticism. To gather, then, any just notion of Homeric antiquities we must look for monumental evidences; most happily, however, the Homeric poems themselves give us the clue where this monumental evidence is to be sought.

Very few Ionic towns in Asia Minor have undergone systematic excavation, but, fortunately, we need not circumscribe our evidence to the strict limits of the scenes that Homer describes. The "Iliad" and the "Odyssey" show clearly enough that the Hellenic people on the east and west of the Ægean were, practically, in character and customs, one. We may argue, then, from excavations in the West, of the civilisation of the East. This is, then, the first important *literary* evidence, the oneness of the Hellenic people; the fact that in dress, customs, dwellings, implements, the Trojans and their allies were one and the same with their foes; a local peculiarity, indicated by an epithet here and there, only confirms the general impression. Further, we learn that one nation, accounted barbarian in classical times, was in Homeric days conspicuous for its advanced civilisation. Priam offered, as part ransom for the body of Hector, the goodliest of his possessions, a Thracian drinking cup. Achilles prized above others his splendid Thracian sword. The causes of this early prosperity are not far to seek. There is abundant evidence, archæological and philological, that Thrace was in close and constant contact by land with Asia Minor, by sea with Phœnicia. We may take it generally that this artistic predominance of Thrace subsided with the rise of colonisation from Greece proper.

A third point, most clearly evidenced by Homer, is that works of art and objects of use were produced rather by individual craftsmen than by local industries; we do not hear in the Homeric poems, as we do in classical times, of Beotian bucklers, of Chalcidian swords. This prepares us for the further important fact that the Hellenes of the Homeric days were a people who imported rather than exported manufactured and artistic objects. They bartered their raw produce for the finished manufactures of the East. This carrying trade between the East and Hellas lay, of course, principally in the hands of the Phœnician. We need only recall for a moment the breast-plate of Agamemnon, gift of a king of Cyprus; the mixing bowl which the king of the Sidonians gave to Menelaos; the gold and amber necklace which the Phœnician trader gave to the mother of Eumaios. Literary evidence then bids us look to Phœnician remains for analogies to those articles of import, descriptions of which occur in Homer; and not only to Phœnician remains found in Hellas, but to those scattered far and wide in the tombs of Etruria and of Latium. Shortly to recapitulate, the poems of Homer themselves bid us look for evidence, not only, as we should naturally presuppose, to the earliest Greek remains, but also to the antiquities of Phœnicia and the North.

Dr. Helbig begins with Phœnician art industry, and no chapter of his work is fuller both of well-ascertained fact and fruitful suggestion. He opens with a polemic against Professor Brunn. It has been supposed by

* Das Homerische Epos aus den Denkmälem Erläutert. W. Helbig. Leipzig, 1884.

Brunn that the famous silver and bronze bowls, so well known for their curious and mechanical mixture of Assyrian and Egyptian elements, are not the work of Phœnician artists, but of Cyprian Greeks. Brunn believes that the Phœnicians were mere traders, incapable of artistic effort. He further thinks that the freedom of style, the naturalism displayed in some of these bowls, can only be due to Hellenic impulse. Helbig brings a mass of evidence to show, and we think conclusively, that this view is mistaken, and that the Phœnicians were, in the early stages of their art development, abundantly capable of such naturalistic work as we see on these bowls; *à priori*, we should, indeed, expect their work to be nearer akin to Hellenic than to Oriental style. Their civilisation was developed under conditions wholly different from that of Egypt or of Chaldæo-Assyria. The artists of the Nile valley and of Mesopotamia were bound down by a strict despotism, which necessitated a severe conventionalism, which hampered all individual freedom; the Phœnicians, on the other hand, had a land whose physical conditions prevented centralisation, a climate that was variable, a coast-line that invited trade; every impulse was at work that could stir and prompt individual artistic effort. To this *a priori* argument we can add the testimony of fact. Both at Mycenæ and in Cyprus works of art have been found of undeniably naturalistic tendency. Dr. Helbig instances from Cyprus the portrait statue of a man; from Mycenæ, certain figures of Astarte; at Idalium, in Cyprus, a bronze bowl was found, the naturalism of the design of which is surprising, when we compare it to the typical conventional stereotyped forms that appear on vessels of similar workmanship. Clearly there is only one possible conclusion. If the stereotyped work and the naturalistic work be both Phœnician, then Phœnician art must have known two distinct periods and styles. This is precisely what Dr. Helbig holds. He believes that Phœnician art started, as we may believe Assyrian and Egyptian did, in naturalism. That in this stage it came in contact with, and influenced the art of Homer's days: hence the marvellous realistic wonders that Homer describes, the writhing fawn, the lion and the ox, and the like. This period passed; Phœnician art, always dominated by that of Egypt and Assyria, became stereotyped and conventional. This is the style we get in the greater number of the bronze bowls, and this style in its turn influenced Hellenic art in post-Homeric days. When this period set in Dr. Helbig does not decide; the transition was, of course, gradual. —indeed, in some monuments, *e.g.*, a silver cup from Amathus, we have the two principles, naturalism and conventionalism, at work side by side. This view about the twofold character of Phœnician art plunges Dr. Helbig necessarily into perhaps the most exciting controversy going on at present in the archæological world. Every one has been in turn puzzled by this phenomenon of early naturalism, succeeded by, and in part contemporary with, conventionalism. We have Dr. Langbehr maintaining that it is due to the influence of the Asia Minor Dorians; Dr. Milchhoeffer that it is the outcome of Aryan and opposed to Semitic impulse; and finally Dr. Helbig, whom ourselves we believe to be right, maintaining that the Phœnicians themselves are responsible. Dr. Helbig promises that the battle shall be fought out in his still unpublished work on the early art of the Italian peninsula.

To the testimony of Phœnician we have to add the testimony of archaic Italian and Greek art. The necessity of such evidence scarcely needs demonstration; it is enough to point out that down to the middle even of the fifth century B.C. Greek art went on producing conventional Oriental types, some of which may have been familiar to the art of Homer's days, and that Italian art, being of less independent inspiration, bears the impress of antique convention down to even later days. The trade of Latium and Etruria with Phœnicians, Chalcidians, and Phocæans made the West but the feebler echo of the East: hence we look for evidence of the art of Homer to types preserved in the wall paintings and tomb slabs of Etruria, and with even more confidence to the remains of the always backward and conservative culture of the countries east of the Apennines, to the graves of Tolentinum or Aufidena. To the evidence of archaic Greek and Italian art we add the testimony of the North; fragments of vases of Corinthian style have been found in an island of the Steinberger-see, an archaic bronze Hydra at Grachwyl in Switzerland; types superseded in the rapid development of the southern seacoast linger on in the hardier North.

Our material thus collected from Phœnicia, from Greece, Italy, and the North, it remains to arrange and date the available material. Dr. Helbig divides his "Fundgruppen" into Eastern and Western. Beginning with the East we have the discoveries at—1. Hissarlik; 2. Thera; 3. Ialysos; 4. Mycenæ; 5. the Dipylon find. We have placed them at once in the order Dr. Helbig establishes, an order which will scarcely now be disputed. He shows that the remains of Hissarlik belong to a period long before the time of Homer, a period when an early and barbarian state of society was as yet almost untouched by Oriental culture. Thera comes next and shows a marked advance; the simple geometrical decorations of Hissarlik pottery develope a more complicated syntax; metal-work appears, but stone weapons prove that the remains are still pre-Homeric. Next Ialysos,—ceramic ornament here approaches the conventional style,—a scarabæus of Amenophis III. is distinct evidence of Egyptian influence, and gives us also as a terminus the sixteenth century. Fourth and of the highest importance comes Mycenæ. The remains here found are still pre-Homeric; they show a condition almost wholly dominated by the East, a richness, a splendour, and in some respects a technical dexterity, which outdoes, though it precedes, the skill of Homer's time. From the civilisation of Mycenæ to that of Homer there is then in the matter of splendour and luxury, a marked decline, although in others, such as by the use of iron and the absence of obsidian, a marked advance. Was there, we naturally ask, between the time of the great impulse from the East and the date currently assigned to Homer, any event which could have caused this difference, this decline? Dr. Helbig unhesitatingly answers there was,—the Dorian invasion. Before the onset of the Dorians, the old civilisations, rich with the traffic of the East, ruled by princes half Oriental, declined, and a new civilisation, ruder, harder, simpler, more indigenous, set in. Such is the civilisation of Homer. It bears the traces, cherishes the memories, of a splendid all-golden, half-Oriental past; but its richest works of art are from the East. Its own conditions of life are simple and Hellenic. The Mycenæ remains fall then, before the tenth century B.C., the date currently given to the Dorian invasion. They touch closely on the times of Homer, but are not identical. Closer, but on the post-Homeric side, comes the find of "Dipylon" vases at Athens. Found though they were at Athens, they were probably not made there. Vases of similar type have been discovered at Melos, Thera, Asia Minor, and North Africa. Their designs are, perhaps, the most Homeric works of art we possess, only the ships that appear, furnished with rostra, make us suspect that their date is post-Homeric. Beaked ships do not, according to Dr. Helbig, appear till the eighth or seventh century B.C.; also the wide distribution of vases of the "Dipylon" style makes us suppose a regular local industry, which seems a post-Homeric notion.

We have been able only to indicate in the roughest way the method employed by Dr. Helbig and some of his conclusions. The arguments he employs it is impossible for us even to enumerate. Nor can we follow him through the second portion of his book, a portion less instructive, perhaps, to the general reader, but of supreme importance to the Homeric scholar. In this second portion Dr. Helbig takes up one by one each detail of Homeric life, and considers what light is thrown on each by the material we have been considering, how far this corrects, how far it confirms, current literary interpretation. He has provided, in fact, an archæological handbook for the Homeric scholar,—a handbook so complete and so profusely illustrated, that the ordinary educated public will scarcely need to seek information farther afield. He can learn here all that archæology can tell him of the building and furnishing of the Homeric house, of chariots and ships, of the cut and colour of Homeric clothing, and pins and necklaces and spirals and earrings, of armour and drinking-vessels, and of art proper as seen in the decoration of houses, in the great shield of Achilles, in the images of the gods. Literary scholarship may possibly be at issue with some interpretations offered by Dr. Helbig, but no literary scholar and no teacher of literary scholarship can afford to remain in his ignorance. The book must surely appear before long in an English garb.

LONDON WATER SUPPLY.

THE London Water Companies have reason to congratulate themselves on the expenditure which they have incurred in employing three such distinguished analysts as Professors Crookes, Odling, and Tidy to make so complete and thorough an examination of the water which they respectively supply to the metropolis; for the results, as given in their Report* just published, are satisfactory evidence of the goodness of the article they undertake to supply, and of a progressive improvement in the methods adopted to free the water from those impurities which it is alleged must necessarily be more or less present in river water. It is likewise a satisfaction to the public to be informed, on such distinguished and reliable authority, that the fears with which they have had reason to be exercised, by the Reports addressed to the Registrar-General, and published by him in the Weekly Returns on the Water Supply of the Metropolis, have been groundless. "Moving organisms" is a term sufficient to make poor "Mrs. Brown's" hair stand on end, especially when the advent of cholera is so confidently predicted, coupled with the comforting assurance that its "germ" finds its habitation in water. That fear predisposes the human frame to contract disease more readily than it would otherwise do is a well-observed fact, and therefore as matter of policy, apart from humanitarian considerations, the circulation of reports by even irresponsible individuals is much to be deprecated. Much more is the employment of vague and indefinite expressions in actual official statements prepared for public information by those whose scientific attainments ought to be a guarantee for strictness of accuracy, to be deplored. The protest, therefore, with which the general observations in their Report is prepared against "the peculiar expressions and modes of statement" found in the Registrar-General's Weekly Returns is quite justified.

The presence of colour in water is ordinarily taken to indicate a certain degree of impurity, though, as in the case of peaty water, there is not necessarily any noxious ingredient in it,—but the use of the colorimeter has shown that there exists "a close relationship between the organic carbon present and the colour of the water," and therefore the natural instinct which leads us to prefer a colourless liquid to one at all tinged with colour is not altogether unfounded. It is scientific observation and investigation only that can pronounce as to whether the substance that produces the colour is really harmful or not. "As a general rule," this Report tells us, "the degree of brownish tint in the same supply of water is found to vary with the proportion of organic matter present in the water, and is strikingly illustrated in the diagrams on which the mean Thames water curves are depicted. To this general rule, however, occasional exceptions are presented by individual samples of water; doubtless because the fluviatile conditions affecting the constituent colorific organic

* "Report on the Composition and Quality of Daily Samples of Water supplied to London during the year 1883." By Drs. Crookes, Odling, and Tidy.

matter of the water and its entire organic matter are not identical, and because the effect of filtration upon the constituent and the entirety are also not identical." The mechanically-suspended substance, which may give the colour in particular samples of water, it is quite possible to remove by the aid of filters,—but the chemical impurity necessitates different treatment. Of the former there are excellent illustrations to be seen at the Health Exhibition, and there are likewise some descriptions of filters capable of absorbing even matters held in solution,—but none of those can possibly be as effective as, or prove a substitute for, air, which the late distinguished Professor Angus Smith demonstrated to be the greatest and most rapidly purifying of all the agencies that could be employed.

Another of the qualities tested was that of clearness, and the results obtained redound to the credit of the water companies' operations; for out of 2,224 samples tested, only 35 were found to be at all turbid, all the rest being "perfectly bright, clear, and well filtered." In three out of five samples recorded as "slightly turbid," the turbidity was confined to the locality from which the samples were drawn, and was dependent on the carrying out of work in connexion with the supply of the neighbourhood. That increased care in the filtering processes has been taken is evident from the proportion of bright samples having increased from 91·4 per cent. in 1881 to 97·6 per cent. in 1882, and 98·3 per cent. in the past year.

But one of the most important results obtained by the analysts was in regard to the amount of free oxygen which the river water was found to contain. It is stated that "practically the water has been found throughout the year to be fully aërated or oxygenated." If so, then the outcry which has been raised against the Thames water as unfit for potable purposes may be utterly disregarded; and if, as the Report asserts, chemists generally "are beginning to make use of the process of free oxygen determination in their study of questions relating both to water supply and to the remarkable self-purifying power of running water which has now become more than ever a matter of positive demonstration," it is to be hoped the controversy regarding the best sources of supply for the metropolis will cease; and common sense taking the place of imaginative theories, will lead to a speedy practical issue in the provision of the requisite quantity, which is the principal question now that the doubtfulness of the quality can be no longer disputed. This is the point, then, to which public attention should be more especially directed; and, as we have before and more than once urged, the most obvious and simplest means of obtaining the supply required for the inhabitants not only of London, but for the greater portion of the Thames basin, will be to store the surplus rain-water where it falls in the upper feeders of the river, whence it can be so conducted, with the full quantity of aëration required, to wherever it is needed.

A PALESTINE MUSEUM.

A PROPOSAL for the foundation of a Museum devoted to the antiquities of Palestine has recently been attracting attention. A room in the Louvre is now devoted to the display of objects of this class, which, however, in 1879, did not exceed eighty-three in number: to these about 100 more have recently been added, including between fifty and sixty vases and lamps in terra cotta. In the British Museum exist between fifty and sixty similar objects; and a much larger collection, belonging to the Palestine Exploration Fund, is partly in the possession of that association, either in London or in Jerusalem, and partly at the South Kensington Museum. The whole collection, in these several detachments, does not exceed, perhaps, 1,000 objects. It is, however, worthy of remark that the proposal, which is evidently made *con amore*, makes no reference to what, in the eyes of many persons, are the most interesting of all the objects as yet recovered in the Holy Land,—a class of objects of which the increase may be with the utmost confidence anticipated, if once such a nucleus for discoveries and stimulus to research as a museum would form were established. These are the coins of Palestine, a large number of which, unassorted and unarranged, were among the objects displayed by the Exploration Fund some years ago. These coins are either silver or copper. Gold Jewish coins are said to be in existence; but the fact, if such it be, has yet to be proved. Apart from the Crusading, Byzantine, and Arabic coins, each of which belongs to a separate chapter in the chequered history of the Holy Land, exist coins of undoubtedly Jewish type, coins of the Maccabean and of the Idumean dynasties, and coins of the Roman domination. In speaking of Jewish coins (if not of all classes of reputed antiquities from the Holy Land), it is necessary to allot a comparatively large space to the subject of forgeries. Thus coins exist which to a cursory inspector would appear accurately to fulfil the descriptions given in the Talmud, and which purport to be of the reign of David or of Solomon. Unfortunately, however, these productions bear square Hebrew characters, and thus carry their own condemnation on their faces. The subject of Jewish coins has been discussed at length by M. de Saulcy, and by Mr. Madden, of the British Museum; but a considerable amount of correction has since been applied to views which were hazarded by writers but very imperfectly acquainted with the Talmud.

There exists a class of silver coins, on none of which occurs the name of any sovereign or pontiff, but which bear numbers which have been taken for dates, none of which, however, are higher than four. At least twenty-eight types of this kind of coin in silver are known, besides seventeen in copper. It has been pointed out recently that these coins present all the features proper to the "Jerusalem money" of the Talmud, which was a coinage issued at Jerusalem for the express purpose of the payment of the annual poll-tax, and of the second tithe, as to which, for ritual reasons, the ascertainment of the year of the week of years to which the coin belonged was a requisite. Numbers 1 to 4 would be adequate to denote seven years, by the use of the same coin for the first and fourth, or for the first and fifth years, and so on; and a system not so very different from that of our own Hall-marks may be thus denoted. This explanation avoids the obvious anomaly which, by the attempt to refer all these coins to the same regnal or sacerdotal years, would limit the issue of some 30 per cent. of the known coins to four years out of at least a couple of centuries.

On this view the coins in question may be of various degrees of antiquity; which, in fact, they appear to be. The oldest coins as yet distinctly ascertained are those of the reign of Johanan the High Priest (John Hyrcanus), B.C. 204. Of this prince four copper types exist. These are followed in regular order by the coins of Judah the High Priest (Aristobulus I.), and Jonathan the High Priest (Alexander I). Their coins, eight in all, bear inscriptions in Aramean characters, somewhat like those of the Moabite stone. There are also four coins of Jonathan with bilingual legends, and six, also bilingual, of Queen Alexandra, Alexander II., and Mattathiah the High Priest (Antigonus). Of the seven kings, Ethnarchs, and Tetrarchs, of the Idumean line, the coins of all have been recovered, viz., those of four of them of Jewish types, thirty-eight in all, and those of the remaining four of Pagan types, forty-one in all, all bearing Greek legends. There are also coins of the Roman Emperors and Procurators after A.D. 70. It is evident that a series of this nature, comprising ninety-seven types, of which twenty-eight are in silver, is in itself matter of no little interest; nor is it very doubtful that it may be considerably extended. Even more interesting than this regnal series are two small copper and one silver coin, bearing the names "Eliashib the Priest," and of "Eleasar the Priest," which remount, if authentic, to 435 and 281 B.C. Here is a very important and interesting starting point for a numismatic collection of the utmost value.

The fauna and flora of Palestine, the gorgeous birds and beautiful butterflies, the little crocodile of the Zerka river, the relics and memorials of the Latin kingdom of Jerusalem, the crests and arms of the crusading nobles, the illustrations of the earliest developments of the pointed arch, and of the stilted or horseshoe arch so gracefully developed by the Saracenic builders, the splendid stained glass of the windows of the Dome of the Rock,—specimens, casts, photographs, and drawings of all these are attainable. These, which occur to the mind on the spur of the moment, are only a few of the objects the collection of which, mutually illustrative as it would be, would throw so much light on the history of Palestine, and on the study of the Scriptures. Hardly a year would pass, hardly a traveller would visit Jerusalem, without adding to the stores of a museum for the founding of which we can hardly permit the doubt that the requisite funds will be readily forthcoming. Local research, in the present state of our Eastern relations, is arrested. To review and place in order the treasures we have actually gained, with the aim of filling up the gaps, and extending and completing the series, is thus the best work that we can now accomplish. It is difficult to assign the historic value of the discovery of a single authentic coin previously unknown to collectors.

NOTES.

ENGRAVED mirrors of Etruscan workmanship are already counted by thousands; those of Greek workmanship now known to us number sixteen. An interesting specimen found at Corinth, and preserved in the Bibliothèque Nationale, is published in the current issue of the "Bulletin de Corréspondance Hellénique." The mirror itself is engraved, the cover decorated with a design in bas-relief. The engraved design represents Artemis just descending from a rudely-indicated mountain, and standing before Apollo seated on a rock. Apollo is of the type which came in about the time of Scopas, *i.e.*, the long-robed priestly figure, crowned and playing on the lyre. The style and conception of the design is,—as we so often find in works of this sort,—fine; the execution somewhat poor. The bas-reliefs of the cover are much better work. Cast as they were for a number of impressions it was worth the artist's while to take more pains. A winged Eros is seated opposite a winged female figure. There is little doubt that we have in the winged female figure a Nike. The juxtaposition is frequent in the third century B.C., when the love-god began to dominate mythology. In fact, we have in the bas-reliefs of the mirror a charming toilette text in plastic form: "Omnia vincit Amor."

IT is a pity that the Trades' Union Congress does not confine itself more to the practical objects for which it was presumably instituted, instead of running off into disquisitions on subjects which have really nothing to do with those objects. Half a day seems to have been spent at the first meeting in discussing the Peers and the Franchise, in the course of which the proceedings were further complicated by the efforts of some irrepressible feminine preachers of women's rights to be instant in season and out of season, or, rather, altogether out of season. Matters were not mended at a subsequent meeting, when much time was taken up in foolish talk about demanding the system of payment to members of Parliament as a step towards the more direct representation of the working classes. It is our rule to abstain from politics, but we cannot help warning the Trades' Union Congress that they are wasting their time and making an absurd figure in discussing such a proposition, which, were it possible to establish it, would at once lower and degrade the whole tone and feeling of representative government to an extent which those who themselves propose it are probably far from realising. The most practical suggestions of the Congress were in regard to the need of more efficient inspection of mines and machinery; and in the line they

take in regard to co-operative labour we are entirely with them. But the Congress will certainly not make its proceedings the more respected in the eyes of even its best friends by spending so much time over ill-judged digressions into subjects wide of its proper objects, and over which much has been said which, to borrow a phrase of Kingsley's, might be catalogued as "pure bosh."

IT is to be hoped that the people of Manchester will not sanction the proposal to raise a sum from the rates towards the expenses of the Manchester Ship Canal Bill. We are willing to assume that the canal will be successful, and that it will be of great commercial advantage to a portion of Lancashire. But the funds of a city corporation are not meant to be paid into the coffers of a trading company, or to aid in its foundation, however advantageous such company may prove to the place. If once the principle is admitted, that the rates of a town may be used for the purposes of assisting a limited company, it will open wide a door to all sorts of applications from companies and promoters,—good, bad, and indifferent. It will cause every kind of improper means to be used in order to influence persons who have a voice in the government of a town, and a place in a city council will have a direct commercial value. It will strike a distinct blow at the purity of municipal life and municipal management. The great railways of England were made with private capital, and if the promoters of the Manchester Ship Canal are unable to raise funds to carry on their campaign, it is obvious that they do not thoroughly satisfy capitalists that their project is a sound one. We should certainly be disposed to say that any Select Committee which found that the scheme was being helped on by the rates of a town would be inclined to feel a prejudice against its commercial value.

FROM a letter in the *Leeds Mercury* it appears that in the competition for the Leeds and County Conservative Club-house, Mr. Corson, who was called in as professional referee, awarded the first prize to Mr. G. B. Bulmer, the second to Messrs. Chorley & Connon, and the third to Messrs. Smith & Tweedale; but that the directors of the Club-house Company have reversed the first and last decisions, and offered Mr. Bulmer the third prize, giving the first to Messrs. Smith & Tweedale. Mr. Bulmer, who writes the letter referred to, refuses under these circumstances to accept the third premium; and on the face of the facts as stated he is unquestionably acting in a very proper spirit in doing so. There is only the question, did the Directors commission Mr. Corson to award the premiums, or only to advise? If the former, they were bound to accept his decision, or else the calling in of a professional referee is a mere farce. But a professional adviser may be and has been sometimes engaged to report upon designs and assist a committee in coming to a decision, without necessarily being commissioned to make the award. It is very important that all architects who are invited to act as judges in a competition should ascertain clearly first whether they are asked to advise or to award, and if the latter they should not enter upon the office without a clear understanding that the committee or owners will abide by their decision. In any case, the directors in this instance will probably hardly have done a wise thing in overthrowing the decision of Mr. Corson, who is in every sense an exceedingly well-qualified judge.

THE idea of a conference on the subject of industrial remuneration and the distribution of wealth has been started by the offer of a gentleman in Edinburgh, who prefers to remain anonymous, to devote 1,000*l.* to the expense of inaugurating a thorough inquiry into the subject. Trustees have been invited to act on his behalf, and to prepare a plan for giving effect to his proposal, among whom are Mr. Thomas Burt, M.P., Mr. Frederic Harrison, the Earl of Dalhousie, and Sir Thomas Brassey. The inquiry is to be opened on the lines of the main questions: "Is the present system or manner, whereby the products of industry are distributed as between the various classes and persons of the community, satisfactory?" and "If not, are there any means by which that system can be improved?" The "inquiry" would take the double form of a conference of representative men, to be held, if possible, in January of next year, and of the subsequent publication of a volume containing a report of the discussions, accompanied by special papers and statistics. As to the first part of the question, we should say at once the answer is an "eternal *no*." The system by which the products of industry are distributed never was satisfactory to all classes of the community, and never will be, in the very nature of things; and if we ever get to the point when it were, the social clock would stand still. "Scipio was not as rich as Lælius, Lælius was not as rich as Crassus, Crassus was not as rich as Lucullus, and Lucullus was not as rich,—as he wished to be." So the world goes, and no conferences will make any fundamental difference in that tendency of humanity, any more than in other tendencies equally broad and simple, so simple that they are overlooked, which lead to the unequal distribution of wealth. However, the idea of the conference is a thoroughly benevolent one, and we have no doubt light will be struck out on some points in the course of the discussions, but we fear they will also give occasion for a good deal of somewhat wild and utopian speculation, and "oppositions of science falsely so-called."*

THE river and sewage question seems to get more and more persistent. The Cam and the Lea are now the prominent sufferers, next to Father Thames himself. The Lea has at length fairly made his complaints heard, and the Local Government Board, following up a report of their inspector, have called on the Edmonton Local Board to provide other means of disposing of their sewage than into the river. In regard to the Cam it appears that between 1869 and 1871 the University Boat Club have spent more than 4,000*l.* in deepening and improving the river (a poor one at best for their purposes), but has filled up since to a depth of 3 ft. chiefly from sewage deposit. A preliminary step seems to have been at last taken in getting the assent of the University and College authorities to a scheme for apportioning properly the liability for new works as between the University and the town, and it is to be hoped we shall before long hear of some satisfactory practical result.

FROM the *Gazette des Architectes* we learn that it is proposed to institute in Paris a special "service d'hygiène municipale," to unite under the control of one chief, having the grade of "sous-directeur," all the services concerned in the sanitation of Paris. These include the management of the water-supply, of the sewers, the overseeing of "ordures ménagères," and of the cleansing of the public streets, the cleansing of brooks and of the street channels, the sanitary treatment of the Seine, the control of all dangerous or insanitary structures, the medical inspection of schools, of lodging-houses, and of the municipal laboratory, &c.

SOME time ago we mentioned the new refuse destructor invented by Mr. Stafford, the Borough Engineer of Burnley,† and which had been brought into use with great success in that town. We are glad to learn that this invention has been brought into operation at Richmond; not that Richmond is especially in want of it more than other places, but that all progress in the systematic destruction of rubbish is a step gained in a sanitary point of view. The accumulation of *débris* which is done with, which no one wants, and which is left to lie festering in gutters and on roadways, is one of the most serious obstacles to keeping inhabited places in a sanitary condition; and the difficulty increases, of course, with the density of population. Those who have noted the aspect of East London streets on Sundays, with the roadways covered with what can only be called "garbage" of all sorts, the leavings of Saturday's crowds and street business, must have wished that all this could be burned up by a happy despatch, instead of (at the best) being swept up to fester in a more concentrated manner elsewhere. We hope it will not be long before every parish and district in London will have its refuse-destructor.

WITH the other diversions of the silly season, the game of architect-baiting is, of course, revived in the *Times*. The periodical anti-restorationist writes his letter describing the removal of some old tomb, and this is enough hint for an article in which the public are informed that when an architect is called in to restore a church, "he is compelled by the conditions of his profession to make work for himself," and with this noble object proceeds to cut away old ornaments and old glass, and to strip the building of everything that gave it a history. This delightful way of putting it was protested against in a sensible but much too mild letter from "An Architect who loves Old Work," which was duly inserted as a reply to the statements of the "leader-writer." But why do not the scribes of the *Times* proceed to apply the same charitable reasoning to other professions? Why do not they point out how physicians, in the interest of their pocket, will prolong the patient's disease; how solicitors endeavour to beguile every one into lawsuits; and so on? It would be just as logical, and give them more matter to fill their columns when Parliament is up. Probably, however, this sort of thing is the result of pure ignorance rather than of malice *prepense*, if one may judge from the insertion in the *Times* last week of the ridiculous letter from "A Country Architect" (very far in the country we should imagine), who asserted that architects had no means of preventing builders from removing the excavated material from a building site! The simplicity of the "leading journal" in inserting such a letter, and actually founding an article upon it, is only equalled by that of the country architect himself, who must be one of the persons who have eaten largely of that commodity called "flap-doodle," defined by Marryat as "the stuff they feed fools on."

A VERY different specimen of *Times* correspondence is the letter from "An Express Engine-driver" on railway brakes which appeared on Wednesday. It is interesting to have a look into railway experiences from the driver's point of view; and the "Express Driver" has had some experiences. He has twice had his engine run down an embankment, and eight times had crank-axles break under him (those crank-axles again!), and he has had practical trial of the working of four of the brakes most in use, and he declares emphatically for the Westinghouse. With that he feels safe; with the others he is not sure whether they will act or not; but the Westinghouse never fails, and has saved his life and limbs five times. Three others have failed more than once, and did not prevent accidents. This evidence, coming from such a quarter, seems to be practically conclusive of the brake question. As the "Express Driver" very truly says, the drivers not only see danger first, but are in it first, and it is a matter of life and death to them; and, therefore, it stands to reason that what they feel to be safest for themselves, and wish to have adopted, is safest for the passengers, "no matter what chairmen may tell gentlemen at meetings."

Westbourne.—A stained-glass window has been recently placed in Westbourne Church, Hants, to the memory of the late vicar, the Rev. J. Mee. The window is a two-light one, the subjects illustrated being Feeding the Hungry and Visiting the Sick, surmounted by architectural canopies. A brass tablet, with memorial inscription, is placed on the cill of the window. The work was designed and executed by Messrs. Warrington & Co., of Fitzroy-square.

* We give elsewhere the list of suggested subjects for discussion.

† A short description of it will be found in the *Builder* for June 21 of this year, p. 912.

THE TIMBER OF THE UNITED STATES.

THE question of forestry and the best means of cultivating that study is at last beginning to assume the importance that it deserves; and a knowledge of what is taking place in other countries can scarcely fail to be useful, more especially to those who are interested in the preservation of timber for building and ornamental purposes. The Americans have been gradually awakening to the extreme necessity of looking after their forests and checking the reckless waste that they have sustained at the hands of pioneers and settlers. In the early days of the continent, the primæval woods, through which the wandering tribes of Indians tracked their way with such marvellous skill, covered a large proportion of the land; but from the moment that the white man appeared, the work of their destruction proceeded with great rapidity. The first arrivals made their settlement along a heavily-timbered coast, and, for the better part of a century, literally hacked their way towards the interior, until the great plains were reached; and, in fact, it seemed to be the aim of the settler to destroy as much as he could of the American forests. The woodman's axe was the symbol of civilisation, and the State seal of Indiana still bears the figure of a wood-chopper. Indeed, the idea that a forest tree was of any value, except to be used up for posts and rails or burned for pearlash, is quite of modern origin. If the colonist lived near the borders of a forest that skirted the streams, he cut the trees down for cordwood, as though the supply were inexhaustible, nor did he ever dream of planting groves about his house, which should at once yield him fuel and give him shelter from the fierce winds. This reckless waste, combined with the incessant demand created by the lumber trade, has in many cases entirely altered the appearance of the country, and, worse than that, materially modified the climatic conditions by interfering with the rainfall.

For several years past, however, a salutary change has come over public opinion in the matter of forestry, and many of the States, especially the younger ones, are as earnest about tree-planting and preservation as the earlier inhabitants were careless. Of course the damage that has been done in many of the older States is practically irremediable, but a great deal of good has resulted in those of more recent constitution, in which the public lands of the United States are situated, by the Timber Culture Act, which applies to nineteen States and eight Territories. The purpose of this law, which was passed in 1873, and amended in 1878, is to promote the growth of forest trees on public land. It gives a right to any settler who has cultivated for two years as much as five acres in trees, to an eighty-acre homestead; or ten acres, to a homestead of 160, and a free patent for his land at the end of three years instead of five. The limitation of the homestead laws to 160 acres for each settler is extended in the case of timber culture, so as to grant as many quarter sections of 160 acres each as have been improved by the culture for ten years of forty acres of timber thereon, but the quarter sections must not be immediately contiguous. Unfortunately this law, excellent in principle, has been made comparatively worthless, and its intention avoided; for non-residents and speculators have taken claims under the Act merely for the purpose of selling them to persons who wished to take them as homesteads or pre-emptions. An amendment should be made, so that when there is a filing under the Timber Culture Act, the land should be withdrawn from entry under either the Homestead or Pre-emption Act, and the title should never be perfected, except in compliance with the letter and the spirit of the Timber Culture Act. Since the passage of the original Act, in 1873, there have been 93,246 filings, covering 13,637,146 acres. Of this amount, there have been entered since the amendment of the Act, in 1878, about 11,177,510 acres. Of the first-named acreage, at least one-third has, from various causes, been cancelled or entered under other Acts, leaving over 9,000,000 acres held for the present under the provisions of the Timber Culture Act.

Taking the eastern half of the States, the two great classes of timber which prevail most and furnish the material for the lumber trade, are pine and hardwood. The former consist, for the most part, of the long-leafed pine (*P. Australis*), the short-leafed pine (*P. mitis*), the white pine (*P. strobus*), the lob-lolly pine (*P. tæda*), the scrub pine (*P. Banksiana*), together with the spruce (*Picea alba* and *P. nigra*). The hardwood comprises, roughly speaking, the hemlock (*Tsuga Canadensis*), white, red, and burr oak, sugar maple, poplar, birch (*Betula papyracea*), tamarack, white cedar (*Chamæcyparis sphæroidea*), yellow cedar (*Thuya occidentalis*), &c. The following table shows what was the quantity of merchantable pine standing in 1880 in sixteen of the principal timber States, together with the amount cut during the year in board-measure feet:—

State.	Variety.	Pine standing.	Pine cut.
Maine	Spruce	5,475,000,000	439,845,000
Vermont	Black spruce	755,000,000	205,591,000
New Hampshire	,, and white pine	1,510,000,000	252,584,000
Pennsylvania	Hemlock and ,,	1,800,000,000	380,010,000
Michigan	White pine	35,000,000,000	4,397,201,000
Wisconsin	,,	41,000,000,000	2,097,299,000
Minnesota	,,	6,100,000,000	540,997,000
North Carolina	Long-leafed and loblolly	5,229,000,000	158,591,000
South Carolina	,, ,,	5,316,000,000	124,492,000
Florida	,, ,,	6,615,000,000	208,054,000
Louisiana	Long and short-leafed	48,213,000,000	84,591,000
Alabama	,, ,,	21,192,000,000	245,396,000
Georgia	Long-leafed	16,778,000,000	272,743,000
Arkansas	Short-leafed	41,315,000,000	129,780,000
Mississippi	Long and short-leafed	23,975,000,000	115,775,000
Texas	,, and loblolly	67,508,500,000	274,440,000
	Total	327,581,500,000	9,927,360,000

This does not, of course, imply that no other timber exists than these kinds, but simply that they form the bulk of the forests. Each State has its various species of trees, according to its geographical situation. Florida possesses a typical tree flora, such as cypress, sweet bay, palmetto, live oak, mastic, &c. Georgia is stated by Dr. Little, in his "Eclectic Geography," to have no less than 230 kinds of wood; while parts of Virginia are timbered from the valleys to the mountain tops with white oak, walnut, maple, tulip-tree, hickory, bass-wood, cherry, chestnut, buckeye, cucumber tree, dogwood, white and black pine, &c.

A most interesting epitome of the timber resources of the southern states is given in a valuable report on the agriculture of Alabama. The list of trees has been compiled by Dr. Charles Mohr, of Mobile, and shows not only the characteristics of the timber of the South but the kinds of soil affected by the various species. The lower pine region, or coast pine belt, includes—(1.) The maritime plain, with saline marshes and flats, and dunes of drifting sands on the islands near the coast. The trees most prevalent here are live oak (*Quercus virens*), a typical form on inlets and bayous; willow oak (*Q. Phœllos*), water oak (*Q. aquatica*), *Vitis incisa*, *Lycium Carolinianum*, and *Yucca aloifolia*. (2.) In the open grassy river swamps and wooded alluvial bottoms, more or less inundated, are red cypress (*Taxodium distichom*), tupelo gum (*Nyssa uniflora*), cotton-wood (*Populus monolifera*), *P. heterophylla*, ash (*Fraxinus viridis*), *F. platycarpa*, hickory (*Carya aquatica*), wahoo (*Ulmus alata*), elm (*U. Americanus*), dwarf palmetto (*Sabal Adansonii*), holly (*Ilex opaca* and *I. decidua*), *Catalpa bignonioides*, *Persea palustris*, &c. (3.) Low flat pine barrens or pine meadows, with pine-pitch (*Pinus Cubensis*), and long-leafed pine (*P. Australis*). (4.) The ever-green glades of the hummock lands and wooded bottoms, more or less peaty, with the open swamp bordering them. Here flourish the bull-bay (*Magnolia grandiflora*), the bay (*M. glauca*), the juniper (*Cupressus thyoides*), loblolly pine (*P. tæda*), *P. Elliottii*, the sour-wood (*Oxydendron arboreum*), and the prickly ash (*Zanthoxylum clava-Herculis*). The principal timber of the (5) rolling pine lands, which are almost devoid of undergrowth, consists of high-ground willow-oak (*Quercus cinerea*), black-jack (*Q. nigra*), turkey oak (*Q. Catesbœi*), mockernut hickory (*Carya tomentosa*), and the saw palmetto (*Sabal serrulata*).

The next zone is a region of mixed tree-growth, known as the upper pine regions. The lowland, with its heavily-wooded river valleys and creek bottoms, abounds in the white spruce and loblolly pines, the white cedar, swamp chestnut oak, red and over-cup oak (*Quercus lyrata*), shell-bark hickory, sycamore, red and ash-leafed maple, linden, and umbrella-tree; while the uplands and so-called wooded prairies are covered with black, Spanish, and post oak-trees. In the cretaceous plains the growth is much the same as in the last-named belt, but many of the trees and shrubs, such as *Illicium Floridana* and *Magnolia grandiflora*, find their northern limit here. The mountain region includes the oak forests of the metamorphic district, while on the high lands of the carboniferous sandstones grow the long and short-leafed pines, the mountain pine (*P. inops*), the scarlet and tan bark oaks, the slippery elm, and the black walnut. On the limestone belts of the valleys and slopes bordering on them are groves of red cedar (*Juniperus Virginiana*), and on the deep rich soils are large poplars black walnut, ash, and white oak.

The forest growth of Indiana and Illinois, and especially those of the Lower Wabash and White River valleys, is hardly surpassed by any other State, both for the number of species contained, and the magnificent development of individual trees. Nearly all the most valuable and largest broad-leafed trees are there found associated, and in a single square mile of wood, seventy-five species of trees, nearly all first-class, were tabulated by Mr. Ridgway. The tallest specimen measured, a tulip-tree, was 190 ft. in height, while individuals of ten other species exceeded 150 ft. Numerous small prairies, which were common in the Wabash basin at the time of its first settlement, have been transformed into woodland, and the area of the forest ground greatly increased.

To the west of the Mississippi lies a vast district, quite different in its tree riches and its requirements. It extends westward as far as the Rocky Mountains, and southward from the British possessions to the warm waters of the Gulf of Mexico, the great river itself being lined throughout its length by forests, which increase in width as the number and size of its tributaries increase in volume. The Missouri is also bordered with forests for the last 200 miles of its course, above that running through a comparatively disforested region. The woods keep up a gallant fight for existence along the streams that flow east, such as the Platte, the Kaw, and the Arkansas, but finally diminish to a thin winding fringe of cottonwood or willow, and the eye for hundreds of miles sees no more, until the pine-covered slopes of the Rockies appear dimly in sight. Iowa, one of the prairie States, was once fairly well wooded, especially on the banks of the Desmoines, but it has been so recklessly maltreated by the settlers, that native timber has almost ceased to exist. In 1875 the forest area of Iowa was estimated at 2,300,000 acres out of a total of 35 millions. Nebraska, when first settled, was almost entirely destitute of timber, the chief bulk being found along the line of the Missouri, composed of willow and cottonwood, a considerable body of the latter existing also at the mouth of the Platte, together with groves of white and burr oak. But of late years Nebraska has shown a most commendable activity in forest operations, having adopted laws which provide that the increased value of lands from live fences, fruit, and forest trees grown thereon, shall not be taken into consideration in the assessment; also exempting from taxation for five years 100 dollars valuation for each acre of fruit planted, and 50 dollars for each acre of forest-trees, together with some other clauses tending to encourage forestry. In this State arose also the institution known as "Arbour Day," which was designed with the object of fixing one day in April, when everybody is expected to keep holiday, and to devote it to tree planting. It is universally observed, not only in Nebraska, but in Min-

nesota, Kansas, and several neighbouring States, and millions of trees are annually planted on that occasion. Between the passing of the Kansas-Nebraska Acts 1854 and 1882, there have been planted in the latter State 244,356 acres of forest trees, while spontaneous indigenous growth is estimated to be equal to half the area planted, since fires have been kept from borders of streams and prairies. Kansas was, at the beginning, more timbered than Nebraska, the Kansas river from its mouth to 135 miles west, the banks of the Neosho, the streams of East Kansas, and the tributaries of the Republican running to the borders of Colorado having been all covered with forests. After the ravages of twenty years the area is estimated at 2,560,000 acres, or 4·92 per cent. of the whole. When the mines of Colorado were first worked, some twenty-five years ago, large bodies of spruce pine and fir covered its mountain sides, and it was estimated in 1870 that nearly one-half had been destroyed by reckless cutting and fires. Within the shadow of these forests rose the head-waters of the Rio Grande, Platte, Arkansas, &c., and as the snow in the deep woods melted slowly, the rise of the streams was gradual and uniform for a long period. Now that these mountains are left peeled and bare, the hill-sides are converted into a bald and bleak desert, the springs are drying up, and the great rivers now rise with sudden violence, and then sink as suddenly in their dry and diminished beds. Miners and railroad tise cutters have inflicted on these mountain region-evils the effect of which it is impossible to over-rate.

New Mexico has likewise suffered in the same way, although in this territory there are still vast regions covered with pines and piñons; and, further west, in Arizona, along the line of the South Pacific Railway, is found a good deal of iron-wood, one of the hardest woods in existence, which will turn the edge of an axe, and can scarcely be cut by a well-tempered saw. The mountains of Montana were originally covered with forests of spruce, pine, cedar, fir, and balsam. A quantity of this has disappeared, and it has been noticed that, in this territory, timber, once destroyed, is not followed by a second growth. Idaho is remarkable for containing the finest body of red cedar on the continent.

The most characteristic indigenous timber throughout the prairie districts is the cotton wood (*Populus monolifera*), a tree of quick and long growth, living a long time on water alone, planting itself in the most unexpected places and sowed by the wind, although time has proved that on the high prairie it requires very careful nurture. Then come the black walnut, the soft maple, the catalpa, the hickory, the box-elder, and the red cedar. A valuable willow, called the diamond (*Salix cordata*), grows on the banks of the Missouri, and there are also many indigenous oaks, including the chinquapin oak, which grows in profusion on the bluff lands adjacent to the Missouri river, and is an abundant bearer, with nuts almost equal to chestnuts, greedily eaten by swine, deer, and antelope.

On the Pacific side of the Rocky Mountains, are forests of a different type and growth, affording enormous supplies of red wood (*Sequoia sempervirens*), of which in California there were accessible in 1880 over 25,825,000,000 board-measure feet. The chief characteristics of these magnificent Pacific forests are age, height, and exuberance of growth. The nut-meg-tree (*Torreya Californica*) towers in the coast forests to over 100 ft. with a clear trunk of 40 ft., straight as an arrow; the great Washington cedars (*Sequoia gigantea*) are the loftiest trees in the world, rising from 275 ft. to 400 ft. aloft, and sometimes 40 ft. in diameter, with a marvellously clear shaft from 80 ft. to 150 ft., as true and straight as if laid by a plumb-line; the Douglas spruce (*pseudo-tsuga Douglassi*), an abundant tree in Oregon, 200 ft. or 300 ft. in height; the great sugar pine (*P. Lambertiana*), 300 ft. or more,—all these and many others have deservedly contributed to obtain for California the name of the Land of Big Trees. The oaks, sequoias, and junipers, are as remarkable for age and picturesque aspect as some of the others are for height. The western juniper is one of the most venerable trees of all the higher mountain regions of California, venerable as to appearance and for the vast antiquity of the larger trees, which date back to the great Sequoian age, while hundreds and even thousands of miles may be traversed without meeting with a single perfect tree. All seem to be more or less dismantled, or the top altogether carried away by storms and the ever-recurring snow-slides. When viewing these veterans, we should remember that they have braved the eventful cycles of time, measured by many thousands of years, with a most astonishing vitality. If killed from any cause on one side, the other side still continues its journey of life, excentrically developing, until the investigator finds it convenient to take bearings in order to find the original centre.

From the foregoing remarks, it will be seen how great has been the neglect and waste throughout the United States of one of the most valuable sources of wealth that the country contains. Not only has reckless cutting, but the loss by fire, to be taken into consideration,—the latter contributing very largely to the national destruction. In 1825, a fire passed from Maine into the adjoining New Brunswick, which destroyed 6,000 square miles of territory, including about a million acres of forest land, although nature repaired the damage with wonderful celerity, and clothed the district with a finer forest than before. What will, perhaps, act most stringently in the matter is, that the price of pine lands in many parts has greatly advanced, and this will materially check the timber trade, the vastness of which may be estimated by the statement that upwards of 5,000,000 ft. of timber, principally white ash, are used in the manufacture of oars alone. Another check, which will be greatly increased as time goes on, is that more and more stone is daily being used for building purposes throughout the American cities and towns, and more especially in the Far West and Pacific States, where at present the greatest waste of timber is to be found.

The demand for wood throughout the States is very large, if only for fuel alone, and notwithstanding the increasing area of the coalfield. But, on the other hand, there are vast regions which are not only destitute of coal, but where the cost of transport would entirely preclude its use. The lumber trade is on a scale that is unknown in any other country, the statistics of the census year showing that there were 25,708 establishments for the production of sawn timber, representing 181,186,122 dollars of capital, and employing 147,956 hands. The amount and character of the produce for the year was as follows:—

Value of logs		$139,836,869
Board-measure feet sawn	18,091,356,000	into
Laths, numbering	1,761,788,000	
Shingles	5,555,046,000	
Staves	1,248,226,000	
Sets of headings	146,523,000	
Spool and bobbin-stocks, ft.	34,076,900	
Value of total product		$233,268,729

THE BRITISH ARCHÆOLOGICAL ASSOCIATION AT TENBY.*

(From our own Correspondent.)

ON Wednesday, the 3rd inst., the party proceeded by special train to Pembroke Station, at which place they found the brakes in readiness. In passing through Pembroke we heard one stranger express great surprise that so small a place was inscribed in such large letters on the map; but when this scoffer came within sight of the castle, with Monkton Priory as a background, he subsided. Passing the ruins we drove through the pretty wooded valley of Coits-water (*coed*, a wood) past Orielton, the old home of the Owens, now the seat of Mr. M. A. Saurin. Near the road are a cluster of round bronze-age barrows. Passing on we reach Brownslade, the seat of Colonel Lambton, where a large barrow had been opened by the kindness of the colonel. From its shape and construction a careless observer would pass it by as a blown sand hillock, many of which are to be seen in the neighbourhood, but in reality it is an assemblage of human skeletons (some hundreds) lying two and three deep, all oriented. In the centre was a kistvaen, containing human and animal bones, a small slab of limestone about the size of a sheet of note-paper, on which was roughly described a cup in a circle, and a doubly-cupped stone on which a pivot had turned. Among the outer skeletons were found two bronze rings and a small stoup cut from red sandstone. In the immediate neighbourhood are the foundations of a tiny chapel. The place is called Churchways, and the farm Bullibar,—Pwl y Pur, Pur's Bar. The supposition is that the primary interment was that of a man whose rank or sanctity cast a reflected glory on the many obscure dead who rested round him; these latter were brought from a distance, for the country must always have been very sparsely inhabited. After lunch the party proceeded to Angle, from which a grand view of the Haven was obtained, and from which place Henry II. sailed for the conquest of Ireland. Here a curious castellated building was examined, which is supposed to have been used as a rectory; if so the divine must have indeed been a member of the Church Militant. Thence to Eastington, a fine specimen of an Edwardian house; then on to Rhoscrowther, and home by Pembroke.

Thursday, Sept. 4th. "Demetia (Pembrokeshire), with its seven cantreds, is the most beautiful, as well as the most powerful district of Wales; Pembrock, the finest part of the province of Demetia; and the place I have just described (Manorbier), the most delightful part of Pembrock. It is evident, therefore, that Maenor Pirr is the pleasantest spot in Wales." So said Giraldus Cambrensis in the twelfth century, and though some of our party considered the old chronicler slightly prejudiced in favour of his own home, all admitted there was a good excuse for his somewhat exaggerated extollation. Manorbere has not the proud strength of Pembroke, it lacks the architectural beauties of Carew, the historic associations of Lamphey, and the fairy-like beauty of the Episcopal palace of St. David's, but no Mediæval building in Pembrokeshire excites a greater interest. It originally stood in a walled park of some 150 acres, in which were signal towers (part of the chain that extended through Tenby). The castle and its precincts was divided into three wards. The outer ward is entered from the north-east. There are slight remains of the barbican, which seems to have been square, a semicircular bastion (see illustration) is nearly complete, although the walls in its immediate neighbourhood have been mined, most likely in the Parliamentarian wars. A deep ditch divides the outer from the inner ward; the digging of this moat appears to have destroyed a square tower adjoining the gate-house. A draw-bridge spans this ditch, working in one of the original sockets, but the other socket is a restoration. Entering the middle ward through the gate tower, on each side are small chambers which have been rendered habitable by the tenant, Mr. J. R. Cobb; to the north will be seen a semicircular tower, still known as the Bull Tower, because the parish bull had his residence there in the last century. On the south is the round tower, which is still covered by its original stone dome; the woodwork has been restored, and it is now inhabited. A building standing due east and west is imagined to have been the kitchen; over it is a room supposed to be the banqueting-hall. Some, however, maintain that they were both chapels, one of earlier date than the other. Portions of Manorbere were erected about 1100. It was no doubt nearly rebuilt in the Edwardian period, again altered during the Glyndwr rebellion, strengthened in Elizabeth's reign, and dismantled in 1648. Mr. Cobb has laid bare many old foundations, and cleared out the well, in which were found a number of bolts made of lead, resembling clock weights. He also found the keys (Jacobean) lying in the moat, and an episcopal gold ring was among his spoils.

Leaving the castle we sought the church, over which the good vicar, the Rev. A. Wratislaw, conducted our party, and Mr. Loftus Brock gave a lucid and excellent description. Many churches in Pembrokeshire are worthy of note, but not one exceeds Manorbere in interest. The church would seem originally to have consisted of a nave. This was added to, and lighted by long Norman windows; then the aisles were added, and arches cut,—one had almost said quarried,—through the walls; the head of one of these windows having been left apparently for a tell-tale. After nave, chancel, and tower were completed, a northern transept was added as a mortuary chapel for the De Barri family. In the chancel lies the effigy of a cross-legged knight in mixed mail and plate armour; on his shield he bears the four bars of the De Barris, and tradition declares him to be the uncle of Giraldus Cambrensis.

After leaving the church a small cromlech

* See page 318, *ante*, and illustrations in this number.

was visited, which Mr. Laws declared was the original "Purr stone," from which the place derives its name of Maen-y-pur. Then to lunch, and on to Lamphey Palace, past the little church of Hodgeston, which was restored through the liberality of the Cambrian Society some years ago. Lamphey Palace lies low. We drove through the park-like grounds of Mr. C. Mathias, passing under a curious arch with a Decorated niche, and then along a shrubbery, in which, by the way, hemp palms were flourishing, and had flourished unprotected for the last twenty years. We crossed a walled garden and reached the ruin, which consists of two blocks of building, detached from each other, and certain smaller works dotted about. The eastern block, which seemingly contained the residential apartments, is remarkable for its crown of arched parapet, resembling that which surrounds the Palace of St. David's, and has been attributed to Bishop Gower, though the wood is rougher than that which is the glory of St. David's. The western block is little better than a shell of the outlying buildings. The chapel is of most importance, and stands on a small cloister. It has a fine Perpendicular east window in good preservation, and is generally attributed to Bishop Vaughan,—1509 to 1523. Rawlins, when bishop, was visited at this house by Leland, the antiquary. Bishop Barlow was the last ecclesiastic who held it; from him it passed to the Devereux family, and the three Earls,—Walter, Robert I., and Robert II.,—made it their home.

From Lamphey the party made their way home; some turning off at Penally to examine the cross, ruins of St. Terlo's Chapel, and assist at a bazaar for the restoration of the church.

On Friday, the 5th, our indefatigable shepherd, Mr. Wright, the Congress Secretary, collected his flock of B.A.A. lambs at Pembroke. After a long drive through a somewhat dreary country we reached the coast, and a line of cliff and crag opened out to view which well repaid us for the journey. Eastward and westward as far as eye could reach stretched the iron-bound coast of Pembrokeshire, carved into a thousand fantastic bays and headlands by the ceaseless roll of the Atlantic breakers which find no land to curb their might between St. Govan's and South America. The immediate object of our search was not, strictly speaking, archæological; though Norsemen gave their name to the Stack Rocks, they have never been inhabited by man, nor, for the matter of that, ever will be, but they are not tenantless, thousands upon thousands of guillemots (called in the Pembrokeshire dialect elegugs) come here to breed, arriving in May and leaving in August; unfortunately we were, therefore, too late to see the birds. From the Stacks we drove along the coast, and passing several ancient earthworks (which are said to be Danish, though as all that have been examined contain flint chips they would seem rather to be Neolithic), we arrived at St. Govan's Chapel.

This little church stands across a narrow gully which gives access to the beach. It is a very rude structure built into the live rock, 20 ft. long by 12 ft. broad. The entrance is by a door in the north-west angle, and the exit by the west; both of these doorways are arched. A limestone slab forms the altar, and under the northern wall is a small hot well, which formerly enjoyed a great reputation for curing diseases of the eye. On the left hand of the altar a doorway leads into a sort of grotto in the limestone rock, somewhat resembling a human form; this, no doubt, was the original sanctum sanctorum. From the vaulted arch of the roof, the pointed arches, and the style of masonry employed, Mr. Loftus Brock came to the conclusion that the building is of comparatively modern date, but that it was erected on a site deemed holy when Christianity was first introduced into South Wales. St. Govan finds no place in the Welsh hagiology. Some will have it he is no other than

"Gawain, surnamed the Courteous, fair and strong."

Walwyn's Castle, an earthwork lying between Haverfordwest and Dale, is said by some to take its name from the same hero, while others think the name is derived from a Latinised Irish word Gobanus, which simply means an eremite. Many wonderful tales were told of St. Govan. It is said that when he was pursued by Pagan persecutors he hid himself in his grotto, which miraculously closed around him. Hence the mark of ribs on the limestone, and if (having full faith in the legend) you get into the cleft, express a wish, and turn around, your wish assuredly will be granted. These wicked persecutors, not being able to find the saint, stole his bell, which they placed on a stone outside; the bell, like its master, slipped into the stone, and there it remains. If you doubt, hammer the stone and you will hear it ring.

From St. Govan's we drove to Bosherston, where is a rude cross in the churchyard, the Saviour's head only being carved at the intersection of the limbs.

Thence we proceeded to Stackpole Court, the fine seat of the Earl of Cawdor, examined his gallery of pictures, many of which are very good (unfortunately the Hirla's Horn is at Golden Grove). Thence to the Warren, where are some curious prehistoric remains, broken cromlechs, bronze-age barrows, and strange low walls forming circles, lines, squares, &c., which led to a long discussion, but no definite conclusion. Flint flakes and iron slag lie on the surface. In the immediate neighbourhood, cinerary urns, bronze weapons, and a gold fibula, now in the British Museum, have been discovered. Passing by the swannery, which excited great admiration, we drove to the church of Stackpole Elidur, which lies within his Lordship's grounds. This church was restored by Sir Gilbert Scott, and consists of nave, chancel, and two small aisles on the south side. On the north side of the chancel lies a mailed cross-legged knight, his right hand on his sword, and his left resting on a plain shield. This is believed to represent Elidur de Stackpole (twelfth century). In the aisle are two other effigies, and a tomb to Roger Lort (1613), a former owner of Stackpole. On the south side of the chancel in a small chantry is preserved the original stone altar, on which is the following inscription:—

CAM . . . . ORISI.
FILI . . . . FANNUCI.

This seems very early, — perhaps seventh century.

On Saturday we got under weigh in the town of Tenby. Up to this we had been favoured with splended weather; but on this occasion we were treated to a fine specimen of what Pembrokeshire can do in the way of wind and rain. The local secretary was asked what he thought of the weather, and stated that rain from the south-east usually lasted twenty-four hours. He proved to be right. However, some fifty ladies and gentlemen stood by the programme, and we proceeded. We first passed Scotsborough, a ruined manor-house, once belonging to the Perrots, thence up a terrible hill to Gumfreston, a charming little church, about two miles from Tenby. It consists of nave and chancel, with a tower at the junction, and on the northern side a small mortuary. The date seems early in the fourteenth century. The only entrance is by a west door, under a porch, in which is a very archaic stoup. A stone bench runs along its walls. In the chancel is a fine Decorated piscina. The baptistery consists of a semicircular chamber in the north wall. The tower, a good typical specimen, is 60 ft. high, 20 ft. square at the base, and 14 ft. at the top. On the north-west of the nave are the remains of fresco-paintings, very rude,—apparently instruments of torture are depicted. The bronze sanctus bell preserved at Gumfreston is 8 in. in height, quite plain, but of good workmanship.

Then on to Carew. We stopped to examine the fine interlarded cross before entering the Castle; on it is an inscription that defeated the antiquaries until two years ago, when Professor Sidebotham obtained a photograph, and, after consultation with Professors Sayce and Rhys, deciphered:—

MARGIT
IUT DE
CETT FX
} Margitent Decett fecit X.

Margitent is an archaic form of the modern "Meredith"; "Decett" is a Gaelic name not uncommonly found in old Welsh inscriptions. This translation has effectually destroyed one error; it used commonly to be said that the scroll crosses of Carew and Nevern were Runic. Now Carew, at all events, proves to be early Welsh. Having admired the cross we passed into Carew Castle, which lies on the shore of Milford Haven. Caerau, in Welsh pronounced Cary, is the plural of Caer, an earthwork, and that, no doubt, is the derivation of the name. One of these camps forms the site of the Mediæval castle; the lines of the other may be discerned across the water. Carew was given as a dower to Nest, daughter of Rhys ap Tudor (when she married Gerald de Windsor, castellan of Pembroke), by her brother Griffith ap Rhys, Prince of South Wales. Nest was a celebrated beauty. She had previously borne a child to King Henry I. Her descendants took the name of Carew, and still own the castle (Carews of Crowcomb, Devon), but several interlopers have been in possession. Sir Rhys ap Thomas, who raised Wales for Henry VII., added immensely to it, and Sir John Perrot, Lord Deputy of Ireland, did even more. Perrot is said to have been a son of Henry VIII. The western front is a grim Mediæval fortress, flanked by two round towers. The northern portion is a grand Elizabethan mansion, with ranges of large windows and oriels running up the whole height. This last was Perrot's work. The inner western portion, of Late Perpendicular, is attributed to Sir Rhys ap Thomas.

From the castle we adjourned to the Parish Church, consisting of nave, chancel, two aisles and north transept, with a well-built lofty tower. The church is Decorated, the tower Perpendicular. In the south aisle is the effigy of a chain-mail clad knight cross-legged, and with his head on one side. Fenton considers that it represents Sir Roger de Melyn, *temp.* Edward I. There is also a monument to an ecclesiastic. From Carew we proceeded to Upton. This has been rebuilt, and is simply a modern house of a castellated form.

When are we going to Pembroke? had been asked over and over again. We had driven through its dingy streets twice, and admired the frowning fortress from afar. But a closer inspection was reserved for Monday, the last day of the Congress (the expedition to St. David's being an extra, and to some extent not official). Although the Mediæval castle was founded by Gerald de Windsor in the reign of Rufus, some sort of fortification existed on the spot for centuries before his time. Mr. Cobb, in his excavations, found Roman coins of Carausius and Constantine the Great.

Pembroke Castle stands on a limestone rock, from which, indeed, it seems to grow; both are draped with ivy, so that it is difficult at first sight to say which is natural and which is artificial. Beneath is a great cavern, which has been enlarged by man, and faced with masonry. This is known as the Wogan. The most striking features of this magnificent fortress are the flanking towers above the Wogan and the keep. This last seems to stand as a sentry over an inlet of Milford Haven, and from its position assumes an appearance of even greater massiveness than it really possesses. Its chief architectural features are two couplets of windows, in one of which are two pointed lights under an obtuse arch, in the other two rounded ones under an acute: a small human head is inserted in both. In a wall near this tower is a blocked door, which looks strangely like Saxon work. Pembroke Castle was the birthplace of Henry Tudor, the founder of the royal line. Here, too, Col. Poyer, the drunken Mayor of Pembroke, held Oliver himself in check for two long months, and then yielded to famine alone. From the Castle we passed on to a curious old building, which used to be known as the Prior's House, but in reality was probably the Shire-hall. This had fallen into a sadly dilapidated state, from which it was rescued by Mr. Cobb, and generously handed over by him to the Vicar of Monkton, who now uses it as a residence; the vaulted roofing is well worth close attention.

The Priory of Monkton next was visited; this building takes a sort of middle position between the ruins and the parish churches. It consists of a nave, which was intended for the use of the laity, and which still serves that purpose, and a choir, in former days allotted to the ecclesiastics. The monks are gone, and their choir is roofless. A fine southern porch with a vaulted roof of Early English work remains. A little Norman window, which seems to have been the only light on that side, is blocked up; the western window is lost. The choir is roofless; the east window, of which only the opening remains, from its size must have been very fine; the remains of a triple sedilia on the south side must also have been very grand, but the ashlar has all been removed, and a recess for a tomb on the west side blocked up. There is a large chapel on the north side of the chapel, and the remains of the domestic portion of the monastic buildings may still be traced, with the cloisters that lead to them. This building led to a long debate. Mr. Bowen, the vicar, is anxious to

remove the wall dividing the parish church from the ruined choir; but the feeling of the Association was decidedly against him, as a beautiful Norman arch must in that case be sacrificed, and the chief characteristics of the building irretrievably lost.

On Tuesday last a number of the party went by train to Narberth,—"Arberth, the high grove,"—a place celebrated in the mythology of Wales as the court of mythical kings, now an interesting Irish-looking little town. We examined what small remains are left of the castle founded by Sir Andrew Perrot in the reign of Rufus, and thence proceeded to the picturesque Castle of Llawhaddon. Of the many Mediæval fortresses we had seen none surpass Llawhaddon, standing as it does on a wooded hill, overlooking the sparkling river Cleddan (a sword), with the pretty church nestling by its waters. The grand entrance, a view of which will be found on another page, is very striking. On either side are bastion towers; above the arch in which the gate hung is another, whence the portcullis descended, above which is a window with a label moulding. To the right of the gateway are two octagonal towers; the first was divided into two apartments, with little retiring-rooms attached, each having its own garderobe. The interior of the building must have been very magnificent in its day, and contained many splendid rooms. The chapel was erected by Bishop Vaughan; of it but three windows remain. At Llawhaddon the Bishops of St. David's lived as feudal lords; indeed, they took their title of Baron from this property, and as such were charged with military service. The castle was terribly mutilated in the last century, being used as quarry from which material for metalling the roads might most readily be obtained, and its present condition reflects but little credit on its owners, the Ecclesiastical Commissioners. From Llawhaddon we proceeded to Picton, which is the only castle in Pembrokeshire which was never dismantled. Here we were met by the owners, Mr. and Mrs. Phillips, who most kindly entertained the Association. Picton would seem originally to have been an oblong flanked by six bastions, three on each side. At the east end was the grand portcullised entrance, now unfortunately replaced by a modern Norman doorway. It was originally moated. Its general appearance has been greatly spoiled by additions made at the beginning of the century by the first Lord Milford, but these, we were glad to hear, Mr. Philipps thinks of removing. After enjoying an excellent luncheon provided by the owner, we quit Picton, and proceed to Haverfordwest, the county town of Pembrokeshire, a queer old-world place. Its inhabitants boast that Haverford, like Rome, is built on seven hills. To us it appeared they under-estimated the number, or, perhaps, the severity of gradient led us astray; for every street appeared to be a mountain path, except Hill-street, which is flat.

There are the remains of a grand old castle at Haverford, but as this has been completely gutted, and was until lately used as the county gaol, it is of no great interest. The remains of the priory are also little worthy of notice. On the whole, we were glad to get under sail again for St. David's.

On Wednesday the first object of interest we came across during a long dreary drive was the little rock fortress of Roch. Balanced, rather than built, on a crag, this little towerlet overlooks an immense range of country; this was clearly the purpose of its foundations, as it lies on the boundary between the English and Welsh speaking peoples. It consists of a D-shaped tower with prolonged sides, and may be of the reign of Henry III. The tower floor was most likely a barrack; a straight stair leads thence past a garderobe to the front floor and chapel. Leaving Roch, we proceed onwards to St. David's, leaving Solva to the left; this little fishing village rather reminded us of South Devon, and was the prettiest thing we had seen on this side of Haverfordwest. Soon afterwards we arrived at the city of holy Dewi, the patron saint of Wales. There may possibly be in America very newly founded cities as small,—such as Eden, described by Dickens,—but for its age I have no hesitation in declaring St. David's to be the smallest city in the world; we were told its population was 600, but, if so, they must pack very closely. The good Bishop had prepared a capital luncheon for us in his little city, and there can be little doubt the British Archæological Association were the first batch of pilgrims who have enjoyed episcopal hospitality in the halls of St. David's since the Reformation; for Barlow, the first Protestant bishop, hated the place, and is said to have stripped off its leaden roof that he might dower his daughter with the spoil. Barlow was the destroyer, Gower the creator of the palace. It has four fronts, of Early Pointed architecture, with superb decorations, more particularly the staircase porch. The grand entrance was through a beautiful gateway; immediately opposite is a porch, with a flight of steps leading into the great hall. The archway of the hall affords a rare example of an inverted ogee, and above it are two niches. This great room is 96 ft. by 33 ft., and is lighted by side windows with a beautiful circular rose-window at the southern end, with mullions and tracery. At the south-west end of the hall is the drawing-room; further to the west a suite of state bed-chambers. The chapel has a freestone spire, and is connected to the drawing-room, though it also has a porch and staircase of its own. The parapet of the outer walls, however,—the most remarkable thing at St. David's,—is made out by a succession of small arches resting on octagonal pillars, with ornamental capitals. The arches are built of alternate blocks of purple and yellow stone, and the sweep of each arch is adorned in a similar fashion to the door-frames of the porches. This is the finished result of the 'prentice work we saw at Lamphey, and it is also to be observed in Swansea Castle. Gower was builder of both.

Some of us attended Divine service in the cathedral, others wandering about the little city. The next morning we visited St. David's Head, where the scenery equals that we saw at St. Govan's, though here it is igneous, there limestone rock.

Then back to Haverfordwest, where the forty-first Congress of the British Archæological Association dissolved, after a most enjoyable ten days' tour. Their pilgrimage, we may hope, was not in vain, for in addition to the pleasure derived certain suggestions were thrown out which we must hope will bear fruit. In the first place, Mr. J. R. Cobb was publicly thanked for the tender care he had bestowed on the castles of Manorbere and Tenby. The castles of Carew and Narberth, on the other hand, were found to be in such a sad plight that it was decided to draw the attention of their owners to their state, while Llawhaddon, which, being held by the Ecclesiastical Commissioners, should be a model, was found to be more neglected than any other edifice visited; they, too, were adjured to take measures for the preservation of an invaluable building which had been committed by Parliament to their care.

THE TRADES' UNION CONGRESS.

THE seventeenth annual Congress of representatives of the trade unionists of Great Britain and Ireland commenced on Monday last at Aberdeen. The chair was taken in the first instance by Mr. A. W. Bailey, chairman of the Parliamentary Committee, who in the course of his address observed that notwithstanding the distance of this year's place of meeting from the centres of trade unionism, no fewer than 140 delegates had already sent in their credentials and subscriptions.

Subsequently, the officers of the Congress were elected, Mr. James C. Thompson (president of the Aberdeen Trades' Council) being elected president, Mr. James Swift (of Manchester), vice-president, and Mr. J. W. Annand (of Aberdeen), secretary. Mr. Thompson having taken the chair,

Mr. Broadhurst, M.P., read the report of the Parliamentary Committee, from which we make the following extracts:—

Employers' Liability Act (1880) *Amendment Bill.*

We regret that little or no progress was made with this measure during the past session. Mr. Burt, not being fortunate enough to secure a first place in the ballot, took the next best at his disposal, but when the day came for second reading, the bills in front of it occupied the whole of the sitting. No subsequent opportunity occurred, so that no debate took place.

The Parliamentary Committee did all that lay in their power to promote the interest of the Bill. They prepared about six thousand petitions, with the corresponding number of instructions to petitioners, and despatched them to the branches of the various trades. The return of the petitions to the members of the House of Commons created a considerable interest, and had we been able to obtain a division, this interest would, no doubt, have been evinced in the list of votes.

We have increasing evidence of the necessity of preventing employers contracting out of the Act of 1880, and hope that at no distant period we may be able to do so.

The working of this Act continues to progress, and we now give some figures from a Government return made up to December 31st, 1883.

Employers' Liability Act: Causes entered in County Courts in 1883.

Number of actions brought	313
Number of actions in which damages were obtained	116
Total amount of damages obtained	9,242*l.* 13s. 9d.
Average amount of damages recovered	79*l.* 13s. 6½d.
Cases standing over to following year	41
Cases withdrawn and settled out of court	50

Enginemen's Certificate Bill.

Mr. John Morley very kindly undertook the charge of the Enginemen's Certificate Bill, but no opportunity was obtainable for a debate on it.

There were various other questions which formed the subject of resolutions at the last Congress, but which the committee have been unable to deal with during the year.

Canal Boats Act (1884), *Amending the Canal Boats Act* (1877).

We are glad to note the passing of this amending Act, which has for its object the bettering of the condition of our canal population. The Act of 1877 made provisions for registration of canal boats where families lived aboard of them, and also provisions for the education of the children. The working of the Act was left to local authorities, which, in a great many cases, proved to be ineffectual. The amending Act gives increased powers to the local authorities, and makes the Educational Department responsible for the instruction of the children. The Local Government have now appointed an inspector to see to the enforcement of the Act, and we hope the result will be beneficial to this hard-worked and hitherto much-neglected part of the industrial population.

Mr. Burt had charge of the Bill, and your secretary's name was also on the back of it. The promotion of this legislation was mainly due to the efforts of Mr. George Smith.

Employers and Workmen Act (1875).

Mr. Crawford brought under the notice of the Committee a case in which 1,126 workmen had to take out separate summonses against one employer for the recovery of wages, although the plaint was the same in each case.

The Committee brought the incident under the notice of Sir Farrer Herschell, the Solicitor General, and he and the Lord Chancellor at once agreed to remedy this great hardship, by making new rules under which one summons will be sufficient, if all the names of the complainants are given on it. This will effectively remedy a great evil.

Increased Inspection of Industrial Operations.

It will be remembered that at the last Congress resolutions were passed in favour of increasing the number of factory and workshop inspectors, and also of inspectors of mines.

A careful consideration of these resolutions led the Committee to decide to concentrate their efforts in favour of the increase of inspectors for mines. Mr. Burt and the Secretary both balloted for a day for a motion on this subject, and ultimately Mr. Burt succeeded in getting the first place on July 4th. In the meantime the committee organised a large deputation of the trades, which was very kindly and favourably received by the Home Secretary and Mr. Hibbert (the Under-Secretary for the Home Department), on July 2nd.

In the debate on the motion, Sir William Harcourt's statement was so hopeful that Mr. Burt did not take a division on it. On July 25th, in reply to a question put to him by your secretary, Sir William Harcourt said that the Government had decided to appoint a number of sub-inspectors. We believe that the number will be about half a dozen or so, and that they will be practical miners. Amongst the conditions required for these posts will be one that the candidate shall have worked underground for at least two years, within five years of his appointment.

We congratulate the trades on this further signal success of their efforts for the protection of the lives of the industrial population.

The discussion of the report was adjourned to Tuesday morning.

Joiners' and Carpenters' Associations.

In connexion with the Congress, a meeting of carpenters and joiners was held on Monday evening, in the Northern Friendly Society's Hall,—Mr. Samuel Cocker in the chair,—for the purpose of hearing addresses by Mr. Murchie, secretary of the Amalgamated Carpenters' and Joiners' Society; and Mr. Beveridge, secretary of the Associated Carpenters' and Joiners' Society of Scotland.

Mr. Murchie gave an account of the formation and progress of the society with which he was connected. Established in 1860, the society at the end of that year had enrolled 618 members, but the number had now increased to 26,000. At the end of the year 1860 there were twenty-one branches, only two of which were outside of London, and to-day there were 415 branches, 367 being situated in England and Scotland, and others in the United States, Canada, New Zealand, Australia, and South Africa. He spoke of the advantages of the society in the case of losses by fire and theft, and in times of fire and sickness, and illustrated the progress they had made by showing that at the end of 1860 they had only 32*l.* at their credit, while at the end of 1883 they had 61,617*l.* 18s. 11½d. They had paid to their members 450,000*l.* in the form of benefits. It had been said that a large amount of prejudice existed in Scotland among the well-to-do class against such societies, on the ground that they spent money recklessly on strikes. Now, to show that their money was not spent recklessly

in this way, he would mention that the total sum expended on strikes was 66,000*l.*, a little over 14 per cent., and fully one-third of that amount had been spent on the formation of boards of arbitration, committees, boards of conciliation, &c. If they admitted that the principle of strikes was wrong they had better return at once to the old condition of things and work for 3d. per hour, for that would be the result, if such an admission were made. He would recommend to their attention the recently-published article of Mr. Howell in the *Contemporary Review*, which dealt with trades' unions, and which contained more information on that subject than anything the speaker had ever read. The article in question stated that six societies between 1876 and 1881 had received from their members no less a sum than 1,784,410*l.* 17s. 11d., and within that time they had paid out to their members 1,984,003*l.* 0s. 1d., so that they had given away more than they had received. Mr. Murchie concluded by appealing to non-society men who wished not only to help themselves but their fellow-workers as well to come forward and join the society.

Mr. Beveridge made some remarks on the general question of trades' unionism. One of the most remarkable circumstances of the present day was the energy with which the principle of combination was asserting itself. Everything was being done by societies. Experience had taught men what wonders were accomplished by union, it had shown them that they could do jointly what they could not do singly, and that success in any enterprise whatever lies and depends very much on the hearty co-operation of those interested in it. To what did they owe the Saturday half-holidays, the reduction of hours of labour, and fair remuneration, if not to the hearty co-operation of members of societies such as theirs, backed up by the funds of this and other societies? Some of their non-society friends who might be present might think that they were justified in combining against such contingencies as sickness, accident, or death, but could not see the force of combining for the protection and advancement of trade interests. Why? Because they said that was regulated by the law of supply and demand. That, no doubt, has a very important bearing on the price of labour, but was it through the exclusive operation of that law that wages rose and fell? Had not the will and action of the buyers and sellers something to do with it? He thought they had, and the price of labour depended as much on the will and action of the employers and employed as on the operation of that so-called law. The machinery of trade societies, if properly wrought, would drive oppression from the market-place of labour, and force its way onward for the benefit and well-being of the sons of toil.

Mr. A. C. Telfer, president of the Edinburgh Trades' Council, next addressed the meeting, and he was followed by Mr. Beaddie, Aberdeen, and Mr. P. Esslemont.

On Tuesday the President of the Congress, Mr. J. C. Thompson, delivered his opening address, in the course of which he said that, had it not been for the well-directed and persistent policy of the Congress from time to time, they should have been without many of the enactments which were now on the Statute-Book. It was heartrending to find from the newspapers that so large a number were at present unemployed, more particularly in the iron trade. Was it too much to ask employers of labour to wisely consider their modes of dealing with their employed? They should not be in haste to get rid of those who in times past had added by their busy hands and brains to their wealth, and surrounded them with comforts. In times like these, employers were called upon to make the greatest possible sacrifices, Nay, more,—as employers of labour had their privileges, so also had they their duties to perform. While sympathy was a good thing,—and they honestly thought it should take some practical shape in striving to modify at least those seasons of depression,—much lay to their hand in the way of directing the minds of men in certain directions, with the view of relieving the glutted labour market, such as a thorough revision of our land laws. One other thought on the subject of depression. It must be a patent fact to all that in alcoholic liquors they nationally spent by far too much. It did reflect very heavily upon them that so many were living on the barest necessities, sadly lacking the comforts of life, while they had so many anxious to supply them. At the best their wage would no more than allow comforts of a very common kind, and why there were so many spending their earnings in the direction indicated was most astonishing. It was casting aside the chance of a better and nobler useful life, simply to satisfy the abnormal appetite. Governed, they were not governing. It became them, as leaders of public opinion among their fellows, to urge the principles of sobriety. The relationship between employer and employed seemed to be as strained as ever. Interests that were said to be identical were eyeing each other with continued jealousy, taking the catch who could. This working relationship would never consolidate, but disintegrate. Both sides had expressed themselves very strongly that it was ruinous to be so circumstanced, and that it was a great hindrance to the common weal, yet no satisfactory basis was being asked for on the one hand, nor being held out on the other. The present system, it was clear, had not wrought well, as there was distrust all over. Why? Because employers of labour had generally acted on the principle, not of how much they could offer for labour, but how little. This being the case, new questions arose in the minds of men, and the cry "to be content with thy wage" would never meet them. As every new question thus raised had an ultimatum, it was for men to consider what it might be, and shape themselves accordingly. His opinion was that it must give way to something of a broader kind that would affect and leaven the whole labour community, giving them a grander motive to perform, and that principle was productive copartnership. Such a principle extended would create a living interest, and take away much of the harshness of the burdens that were borne by labour. It was a principle which they would advocate strongly, because, if generally adopted by the employing class, it would disturb the least possible existing machinery; and the more they could take advantage of this the better. Other modes presented greater difficulties, for this reason, that in starting a new movement they had to make headway against the large vested interests which by far too often crushed those new aspiring movements. It was a principle that would likewise distribute wealth more fairly among all classes, and that was a matter to be desired. A great many employers had strong convictions as to the necessity for a principle of the kind, but they had not the full courage to strike out and set at rest what was believed to be the goal between labour and capital. He could assure those employers of a co-operative spirit among working men ready to fall in to some such plan; and they looked to them to open the door. In prosperous times they would prosper together; in seasons of depression they would suffer together. The counterfeit for honest labour would soon disappear. In the meantime, however, they purposed standing truly by their unions, knowing what good they had accomplished in the past; and, wrought now judiciously and wisely, what a great amount of good they would accomplish in the future.

On Wednesday the proceedings commenced with the presentation of a sum of 1,200*l.* and an illuminated address from the workmen of the United Kingdom and other friends to Mr. Henry Broadhurst, M.P., for his services in the cause of labour, and especially in his capacity as secretary of the Parliamentary Committee.

We defer until next week further notice of the proceedings of the Congress.

THE SOCIETY OF ENGINEERS AT THE SIEMENS TELEGRAPH WORKS.

THE practice which the Society of Engineers has followed for many years of paying, from time to time, special visits to some of the great works and industries which contribute to the commerce, wealth, and reputation of Great Britain, had a happy illustration on Wednesday, in the selection of the famous establishment of Messrs. Siemens at Charlton, on the banks of the Thames, near Woolwich, where the manufacture of a very fine specimen of an ocean telegraph cable was in full progress, part being put on board the fine steamship *Faraday* (specially built and adapted for the service of cable-laying), and part still being fabricated in the manufacturing machines and passing under electrical test into the store-room, ready for shipment. Some 5,000 miles of the Mackay-Bennett cable have been laid, and the one line is working through from end to end. It would scarcely accord, however, with either engineering or commercial principles to risk the possibilities of interruption of a single electrical conductor, and the provision of a duplicate line would be certainly dictated by prudence, if not, indeed, deemed an actual necessity. The portion of this duplicate line now nearly finished is about 1,500 miles in length, and will be laid between Newfoundland and the American continent. The shore ends are very stout, and strongly defended by hemp servings and iron-wire sheatings, a diameter of 2 in. being attained by the cable when finished. The deep-sea cable itself is much less protected, having to lie without disturbance on the ocean bottom. It is, of course, hemp-covered and wire-protected, but it is in total diameter only 1 in. over all in its full construction. The finished portions of both shore and deep-sea cables were in process of shipment on the arrival of the party,—which was a very numerous one,—and an inspection of the *Faraday* was the first item on the programme. The ordinary steam-winch of the vessel was employed for hauling the cables on board, and they were at the same time passed forward as they were hauled in through guides into their respective holds, where they were coiled round large central drums or bosses ready for paying out. The deck was one continuous mass of machinery and testing and recording apparatus,—a veritable electrical engineers' establishment on a very extensive scale. The cable in the process of its delivery into the sea is to be hauled by the steam winch out of the hold, and thence it will pass over and under a series of pulleys in order to maintain an easy hold upon it. The required rate of paying out is regulated at the steam winch, which is made to haul faster or slower according to the judgment of the officer in charge, who has the records of speed of delivery and strain always automatically recorded by the instruments around him. The passage of the cable into the sea is illuminated at night by a powerful arc light on each side of the bow.

After this inspection, the manufacturing department ashore occupied long and well-deserved attention, the dimensions and powers of the machines, and the skill and knowledge of requirements shown in their design, being such as are not be seen in any other class of rope or cable making. First there is the copper conductor in the very heart of the telegraph cable. For this, india-rubber has to be prepared for its electrical insulation. This rubber is made plastic, and manipulated with the other ingredients required to form it into sheeting by two heated steam rollers or cylinders. The sheets are then cut into narrow strips by grooved wheels. Following the wire, which has been coated with a solution, the strips of rubber are pressed on to it as it is drawn through the grooved rims of two narrow wheels working one above the other, the excess of rubber being sheared off on each side in the operation. Over the central core huge machines, each containing a number of reels of hempen thread, wind the threads evenly and closely round, one in one direction from left to right, the other in the opposite way from right to left. As these servings pass on from the machines each serving receives the flow over it of hot insulating material, and then passes through a die which presses the insulating material into the substance of the hemp and gauges the size of the cable in every stage. The steel wires are in like manner coiled spirally over the hemp servings by machines carrying reels of wire of as much length as is practicable, in order to have as few joints as possible. In the smaller wires these joints are made by soldering. In the shorter wires welding is performed. It is a curious feature in these machines that the reels are kept perfectly horizontal, notwithstanding the revolution of the machinery which carries them. The reels are placed in frames hung upon gimbals, which are so actuated by an eccentric ring working on the same spindle as the other revolving parts that the connexion between them is always maintained in a vertical line.

The electric lighting department was also viewed with deserved interest, dynamo machines of many dimensions and capacities being in progress, the smallest susceptible of being put in a space of a 6-inch cube, whilst others were of great size, developing high and powerful currents. One very striking illustration was given by the fusing of an iron wire, 5 millimètres in diameter; the machine which performed the experiment absorbed 40-horse-

power from the steam-engine in the act. The wire being galvanised, a very pretty and remarkable effect was produced by the blazing of the zinc over the red-hot iron long before the fusion of the iron itself took place; the flames of the zinc extending along the whole length of the wire, 18 ft., and rising to a height of 6 in. or 8 in. in the air, with numberless curls of white smoke. Finally, the incandescent wire broke and fell on the floor, dashing pieces and sparks in every direction.

An inspection of the Land Telegraph Department, with its poles, insulators, sending instruments, recorders, transmitters, railway signals, testing instruments, galvanic batteries, and other numberless details connected therewith, terminated the rapid survey of the visitors, who might have been well and usefully entertained for as many days as they spent hours in these remarkable works.

Amongst the members present were Mr. Jabez Church, past-president, Mr. Alfred Williams, treasurer, and Mr. Gandon, Mr. Perry F. Nursey, Mr. Berridge, and Mr. Schönheyder, members of council.

Illustrations.

PROPOSED ADMIRALTY AND WAR OFFICE.

DESIGN BY MESSRS. E. INGRESS BELL AND ASTON WEBB.

WE give this week a view and the two principal plans of this design. In compliance with our request, the authors of the design have sent in the following explanatory memorandum:—

1. "As a primary condition of the problem, we endeavoured to arrange the plan in conformity with the latest sanitary knowledge, feeling it to be of the first importance that the civil servants of the Crown should be enabled to perform their duties under healthy conditions. Accordingly, we resolutely abandoned all small, close, damp, and gloomy courts, and ranged our buildings on the perimeter of the site, around one central courtyard of magnificent proportions, and open on all sides to sun and air. This courtyard would be 250 ft. across both ways in its widest part, the large courtyard at the Foreign Office being about 250 ft. by 175 ft.

2. The privacy of all the office rooms was obtained by removing from their side of the main corridors all staircases, lifts, messengers' lobbies, water-closets, and sanitary and other services,—the water-closets being taken up in vertical series in projecting side-ventilated towers facing the courtyard: their water services, wastes, and drainage all passing away from the site without underlying any portion of the building.

3. Quiet for the rooms facing Whitehall was secured by recessing the frontage to that thoroughfare,—the only arrangement, moreover, by which so great a length of façade could be properly seen from so narrow a street.

4. The proper relation of the heights of the several rooms to their horizontal dimensions was secured by the interpolation of a partial mezzanine. The want of some such expedient for harmonising the dimensions of large rooms and small rooms *en suite* is severely felt at the new Foreign Office, and due warning was taken from this and similar public buildings. That this expedient did not necessarily add greatly to the height of the building is shown by the fact that the height to the parapet is precisely the same in this and in the selected design.

5. By the introduction of large glazed halls at the interior angles of the courtyard, the principle of block corridors on a modified scale was introduced, the areas being glazed and utilised as magnificent entrances to the Admiralty and War Office respectively, and they also enabled us to provide congeries of rooms for subordinate officials in the immediate neighbourhood of their chiefs.

6. Provision was made for the occasional increase of the clerical staff by giving all the rooms a larger area than required by schedule, so that instead of there being a number of normally unoccupied rooms, getting damp and stuffy from disuse, every room would accommodate, when needed, a few additional clerks, 'more room rather than more rooms' being the principle adopted throughout.

A distinctive feature of the plan is the provision of a central Council-chamber, in which the chiefs of the two great departments of the State and their advisers could confer, where in time of war maps and models could be exhibited, and where, by special telegraph arrangements, the latest movements of troops and war vessels in any part of the world could be recorded. The various branches connected with the 'Intelligence' Departments of both services were accommodated in the neighbourhood of this chamber. In peace time it would be available for levées. Beneath it a separate entrance to the building enabled officers of the army and navy to have access to the Adjutant-General and Quarter-Master General's Departments on the one side and the naval lords on the other, without threading their way through the Civil departments of the building; and could also have been used for levées. Great care was taken to remove the printing establishment and the kitchens and their accessories to the topmost floors, for the sake of quiet to the Office generally, and for immunity from dinner smells.

So far as possible, the traditions of the old offices were preserved. The fittings of the old Admiralty Board-room, designed by Sir C. Wren and executed by Grinling Gibbons, were intended to be re-used in the new Board-room. The justly-admired screen, enclosing the present Admiralty forecourt, was to have been re-erected across the new Admiralty court facing Spring-gardens, and forming a picturesque termination to the Mall, and the excellent statue of Lord Herbert was intended to occupy in the forecourt of the new War Office a similar position to that which it now holds in the present one.

These notes will, it is hoped, show the care and thoroughness with which the whole problem was treated.

It only remains to speak of the style of architecture selected. It was desirable that the building should be dignified and discreetly ornate as befitting its imperial purpose. It was necessary for the proper accommodation of a multitude of varied requirements that the style adopted should not only possess the reserve and gravity of the Classic manner, but also something of the flexibility of Gothic design. The union of the two was thought to be found in the early and pure phase of Renaissance, the details of which we had made our especial study. It had at least the advantage of combining dignity with picturesqueness; and, moreover, both the constructive and decorative schemes were thoroughly sound and rational. Not a single feature was constructed as mere ornament, while the ornament, sparingly applied, was intended to be throughout original in design, appropriate, relevant, and of high excellence as art."

We may add a word of appreciation on our own part of a quality which is certainly not shown in all the designs, viz., the feeling for the artistic as well as the practical element in the *plan* which this design shows. The interior laying out of the quadrangle lends itself to effect as well as to arrangement, and the three large glazed courts would have formed very striking architectural centres in the interior cosmogony of the building, besides serving their practical purpose as centres of meeting for the internal traffic of the building.

Key to References on Plans.

THE WAR OFFICE.

A. Staff.
B. Surveyor-General's Department.
  B 1. Director of Artillery.
  B 2. ,, Supplies.
  B 3. ,, Contracts.
  B 4. Inspector-General of Fortifications.
C. Central (or Secretary of State's) Department.
  C 1. ,, ,, ,,
  C 2. ,, ,, ,,
  C 3. ,, ,, ,,
  C 4. ,, ,, ,,
D. Finance Department.
  D 1. Finance Department.
  D 2. Auditors.
E. Military Department.
  E 1. Military Secretary.
  E 2. Adjutant-General and Quartermaster-General.
  E 3. Intelligence Department.
  E 4. Deputy Adjutant-General R.A.
  E 5. Deputy Adjutant-General R.E.
  E 6. Army Medical Department.
  E 7. Military Education Department.
  E 8. Commissary-General's Department.
  E 9. Principal Veterinary Surgeon's Department.
F. Miscellaneous.
  F 1. Army Purchase Commission.
  F 2. Judge Advocate General.
  F 3. Pay Office. Commissariat and Transport and Ordnance Store Corps.
  F 4. Pay Office. Army Hospital Corps.
  F 5. Army Sanitary Committee.

THE ADMIRALTY.

A. Board-room Suite and Secretary's Department.
  A 1. Board-room Suite.
  A 2. Military Branch.
  A 3. Intelligence Branch.
  A 4. Naval Branch.
  A 5. Civil Branch.
  A 6. Legal Branch.
  A 7. Registry Branch.
  A 8. Record Office Branch.
  A 9. Copying Branch.
B. Hydrographer's Department.
C. Transport Department.
D. Victualling Department.
E. Controller's Department.
  E 1. Director of Naval Construction.
  E 2. Engineer-in-Chief.
  E 3. Director of Naval Ordnance.
  E 4. Store Branch.
  E 5. Dockyard, Ship, Gunnery, and Registry and Copying Branches.
F. Accountant-General's Department.
  F 1. First Division.
  F 2. Second Division.
  F 3. Third Division.
  F 4. Fourth Division.
  F 5. Fifth Division.
  F 6. Sixth Division.
  F 7. Greenwich Hospital Division.
  F 8. Auditors.
G. Director of Contracts Department.
H. Director of Medical Department.
J. Director of Works Department.
K. Naval Reserves Department.
L. Royal Marines Department.
M. Inspector of Naval Schools Department.

"THE GRANGE," BROOK GREEN.

THE illustration of the above shows the garden front of Mr. Henry Irving's house at Brook Green,—an old one recently altered and added to under the direction of Mr. Fred. Pinches. Whilst the work was going on, evidences of former alterations, dating probably in the early part of George II.'s reign, were brought to light. Owing to the method adopted of adding a wing on each side of the main and older portion of the house, access to the rooms in the east wing can only be had by going through other rooms. The service accommodation being inadequate, it was found necessary to build out-offices at the back, and also to provide a servants' common room. By removing a partition, and building out a bay window, the entrance-hall has been considerably enlarged, and the old staircase opened up to view. Sundry alterations have been made in removing partitions, enlarging rooms, providing bath-rooms, &c., on the first and second floors. With the exception of adding a porch and bow-window, the front which faces Brook Green has been but very little altered. Unfortunately, owing to damp, it was found necessary to remove the ivy which had grown nearly all over it. An enclosure-wall and carriage-gates have been added, in place of the open railing which formerly existed.

Mr. Irving's desire being to retain the unpretentious character of the house, care has been taken not to introduce any feature likely to give it the appearance in any way of a mansion.

The garden attached to the house is nearly an acre in extent, with a large lawn, and containing some good old trees. Here Mr. Irving is able to get the rest and fresh air which the demands of his profession render so necessary.

The works were carried out by Messrs. Stimpson & Co., under the personal direction of the architect.

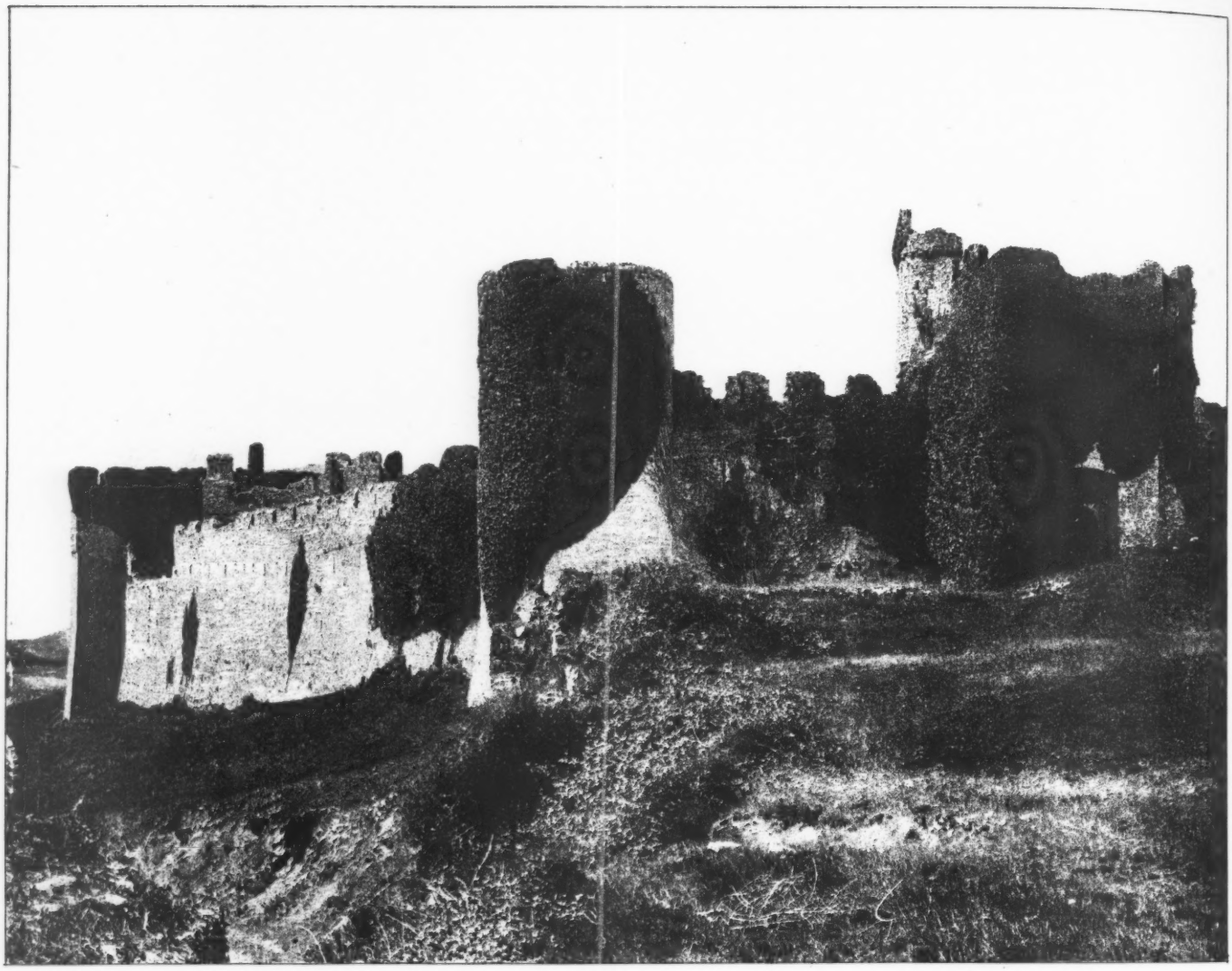
ST. GEORGES DE BOSCHERVILLE: ENTRANCE TO CHAPTER-HOUSE.

THE Abbey Church of which this forms a part is about six miles from Rouen, and is one of the most perfect examples of Norman architecture existing. It will be found more fully illustrated in Mr. Galsworthy Davie's "Architectural Studies in France." A note as to the origin of the church will be found on the drawing.

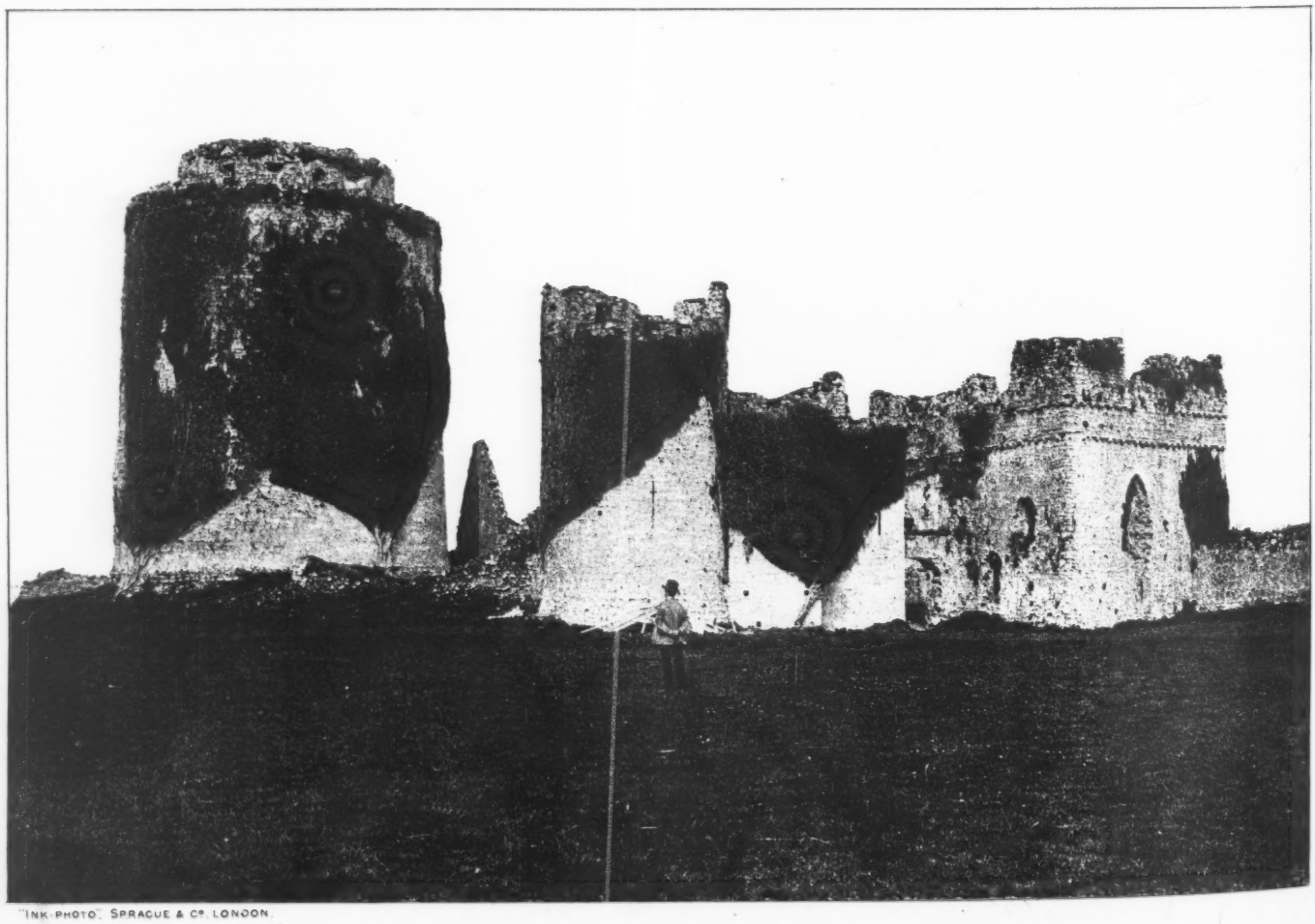
OLD CASTLES AND PALACES IN WALES.

WE give views of the remains of Manorbere Castle, the keep at Pembroke, the interior of the bishop's palace at St. David's, and the gateway of the episcopal palace at Llanhadden, which were among the buildings visited by the British Archæological Association last week. Some particulars of the remains will be found in our account of the Association's Congress at Tenby (see p. 350 of this week's *Builder*).

Lavatory Apparatus.—Mr. H. R. Batson has made provisional application for a patent for improved lavatory apparatus for industrial schools and similar institutions.

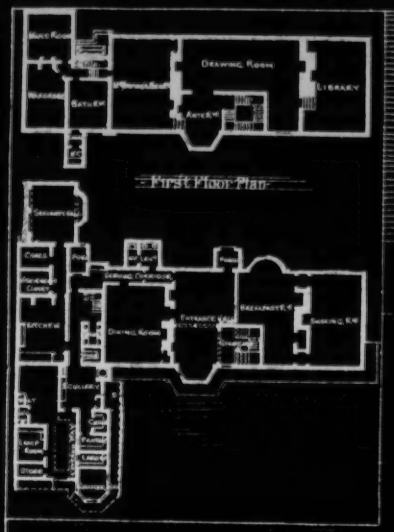


MANORBERE CASTLE.



"INK-PHOTO", SPRAGUE & Cº. LONDON.

KEEP, PEMBROKE CASTLE.



C. F. Kell Photo Lith & Printer.

8 Castle St Holborn. London. E.C.

"THE GRANGE," BROOK GREEN. Mr. F. Pinches, A.R.I.B.A., Architect.

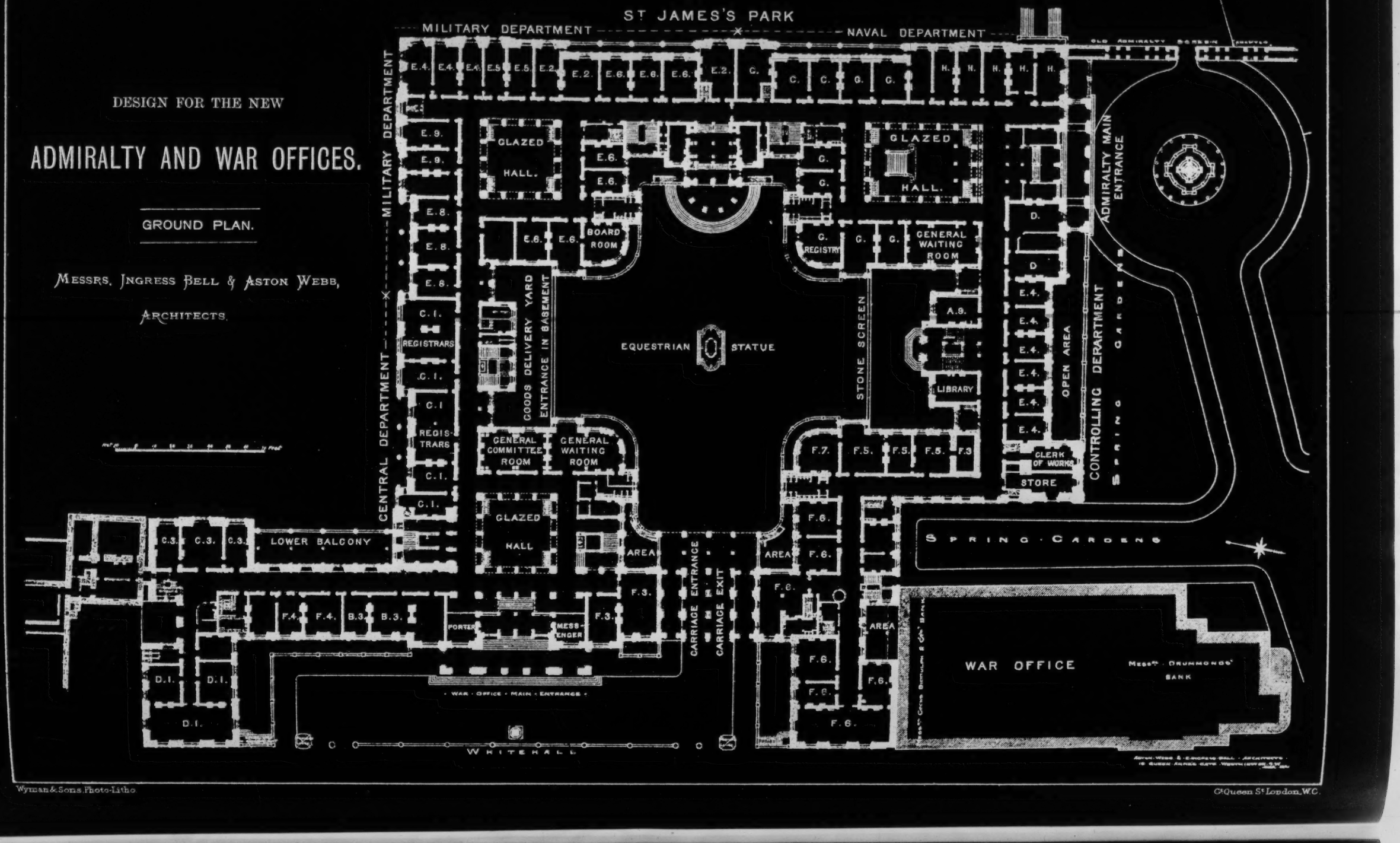
DESIGN FOR THE NEW

ADMIRALTY AND WAR OFFICES.

GROUND PLAN.

MESSRS. INGRESS BELL & ASTON WEBB,

ARCHITECTS.



Wyman & Sons Photo-Litho

C^t Queen S^t London, W.C.

DESIGN FOR NEW ADMIR

By Messrs. E. Ingre

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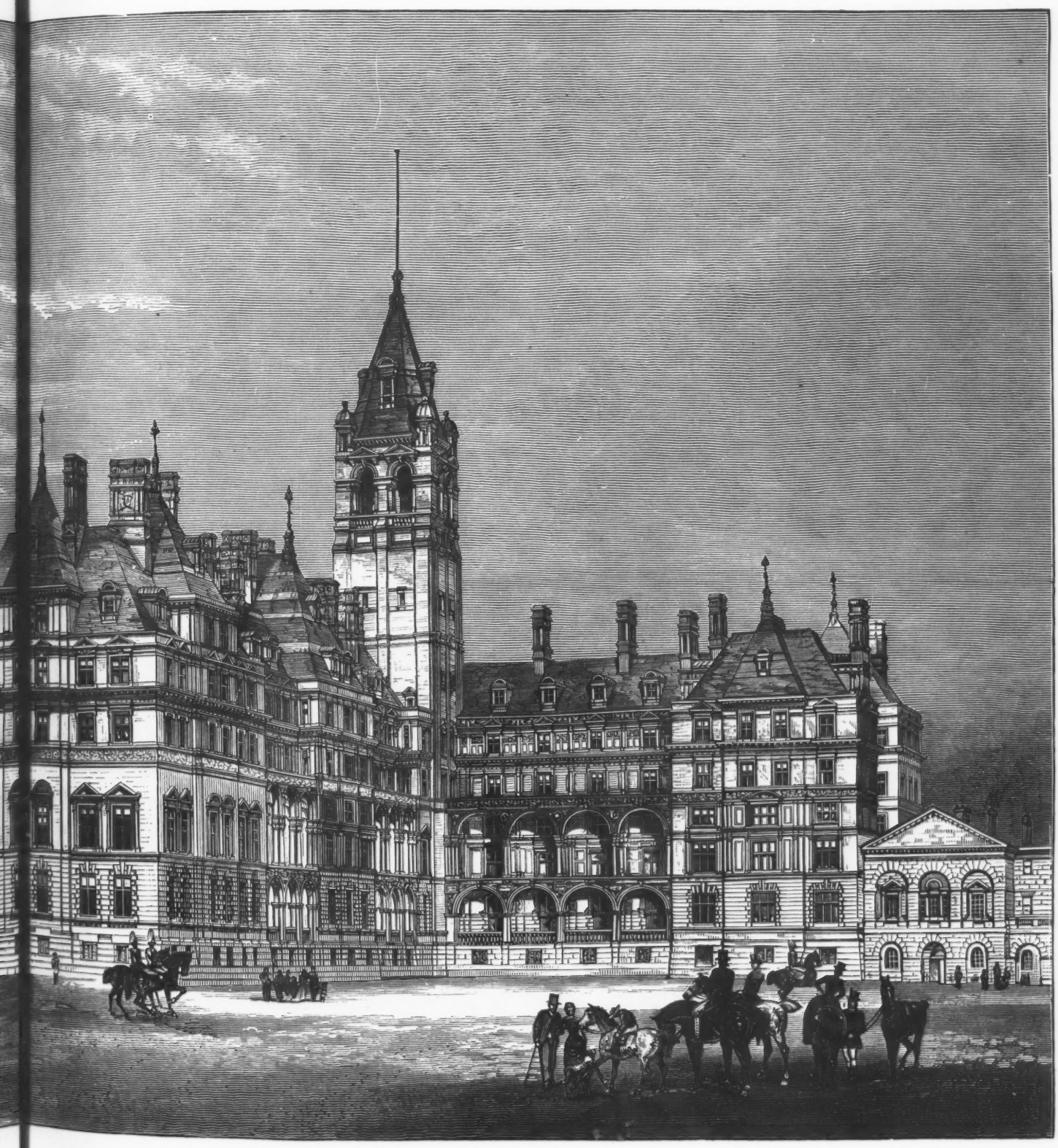


IRALTY AND WAR OFFICES.

GRE[illegible] BELL & ASTON WEBB.

Par[illegible] Front.

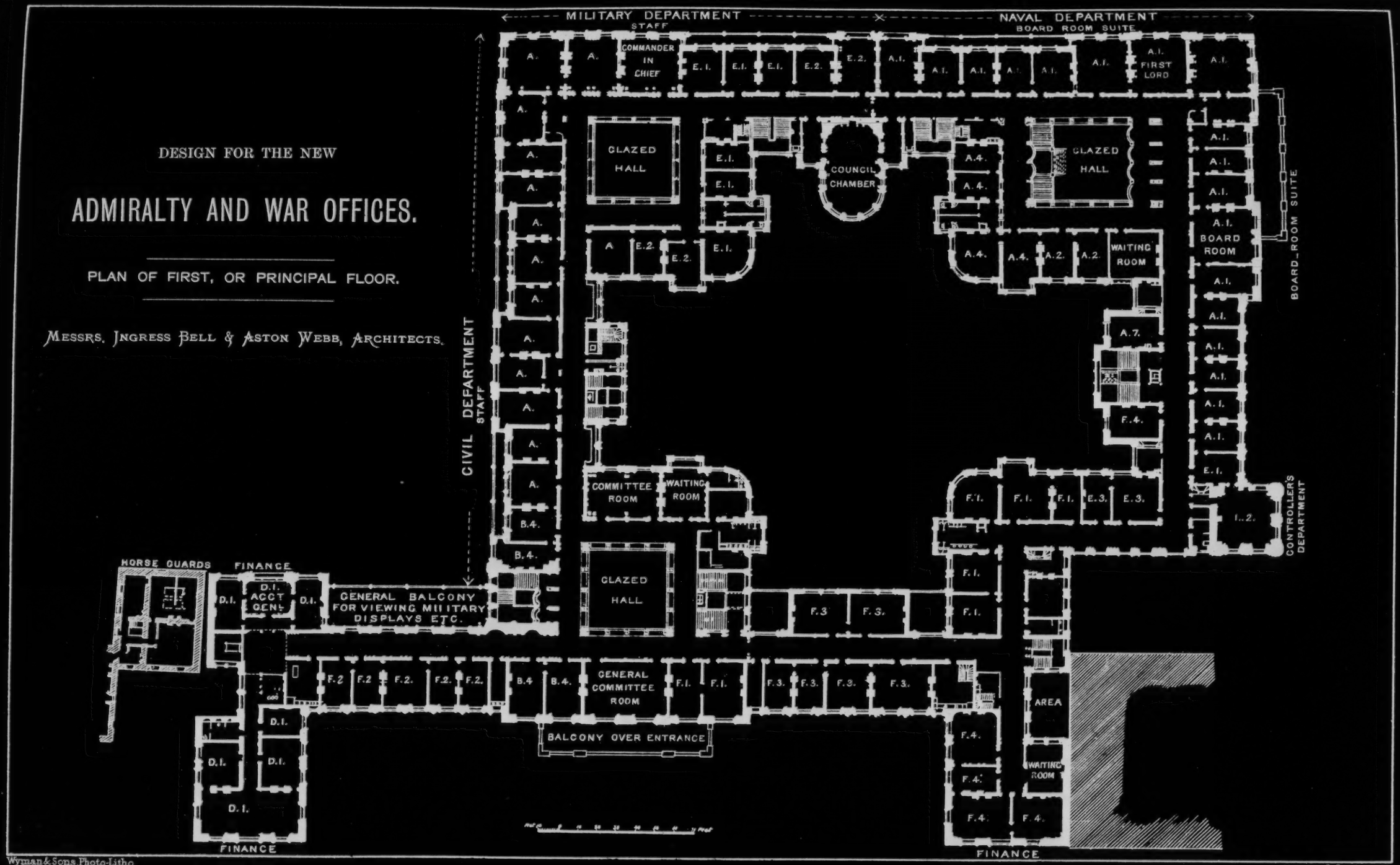
MILITARY DEPARTMENT
NAVAL DEPARTMENT

DESIGN FOR THE NEW

ADMIRALTY AND WAR OFFICES.

PLAN OF FIRST, OR PRINCIPAL FLOOR.

MESSRS. INGRESS BELL & ASTON WEBB, ARCHITECTS.



Wyman & Sons, Photo-Litho.
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CHURCH · OF · S · GEORGES · DE · BOSCHERVILLE ·

ENTRANCE · TO · CHAPTER-HOUSE ·

Scale · of · Feet ·

The ornaments and mouldings of this arcade would be very suitable for reproduction in Terra Cotta.

There were originally three windows over the three arches the sills of which were about 12 feet above the string but they are now blocked up and modernized, the Chapter-House being lighted from the other end.

These Mouldings are ½ Full Size.

Label

Abacus

Base

Sill

The diagonal ribs are semi-circular concavely for intermediate ribs is slightly pointed being 1 inch higher than the diagonal and external and external ribs. There prevents the bow from appearing too low.

The mouldings and ornament of the interior are the same as the exterior, except the label which is simply chamfered.

The columns with caps are probably substituted for figures as on the other side.

All caps are from Table Drawings made on the spot.

All mouldings were taken full size and ornaments ½ full size.

All joints measured

On the figures are the following inscriptions.

1. VITA : BEATA : VOCOR
2. ELO : MOR : HOMN : IVGVIO (broken away)
3. FILI SVSCPE BSC F! (broken away)

They might perhaps be translated as follows.

1. "I am called (away) by a happy life."
2. "Alas, death lies in the windpipe of man."
3. "O son submit to being deceived" or more freely "O son learn that the world is full of deceit."

Front · Elevation ·

Section ·

½ Plan · looking · down ·

½ Plan · looking · up ·

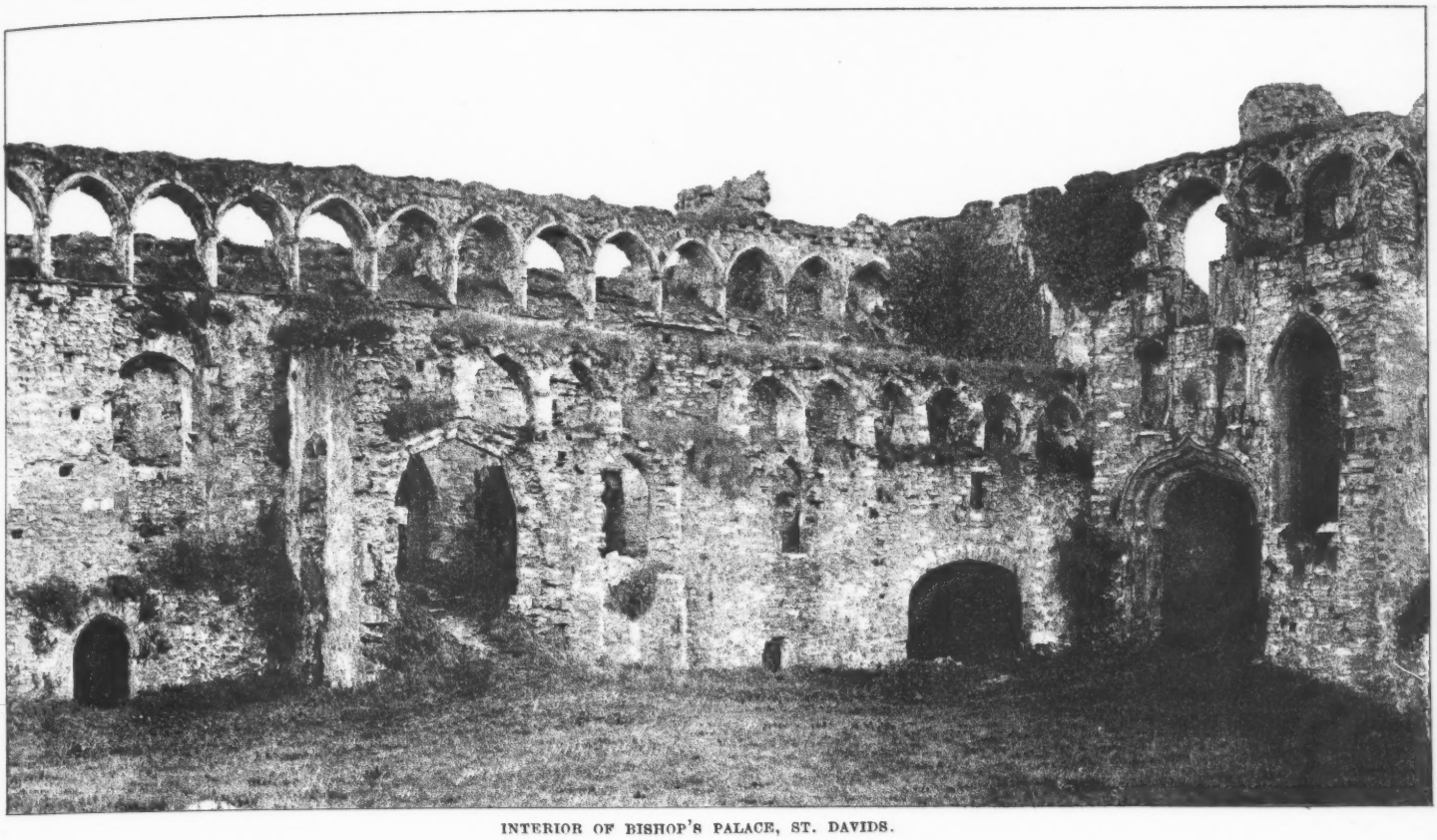
The Church of S. Georges de Boscherville is the only portion left of the abbey of that name at Boscherville, about six miles from Rouen, founded by Raoul de Tancarville who was chamberlain to the Conqueror. It was destroyed at the revolution.

The triple arched entrance shown above leads to the Chapter House, a chamber 25 feet wide by 85 feet long and about 30 feet high vaulted as shown in plan & section. It was built by Abbot Victor in 1211. It adjoins the North side of the North Transept of the Church and is in a very good state of preservation.

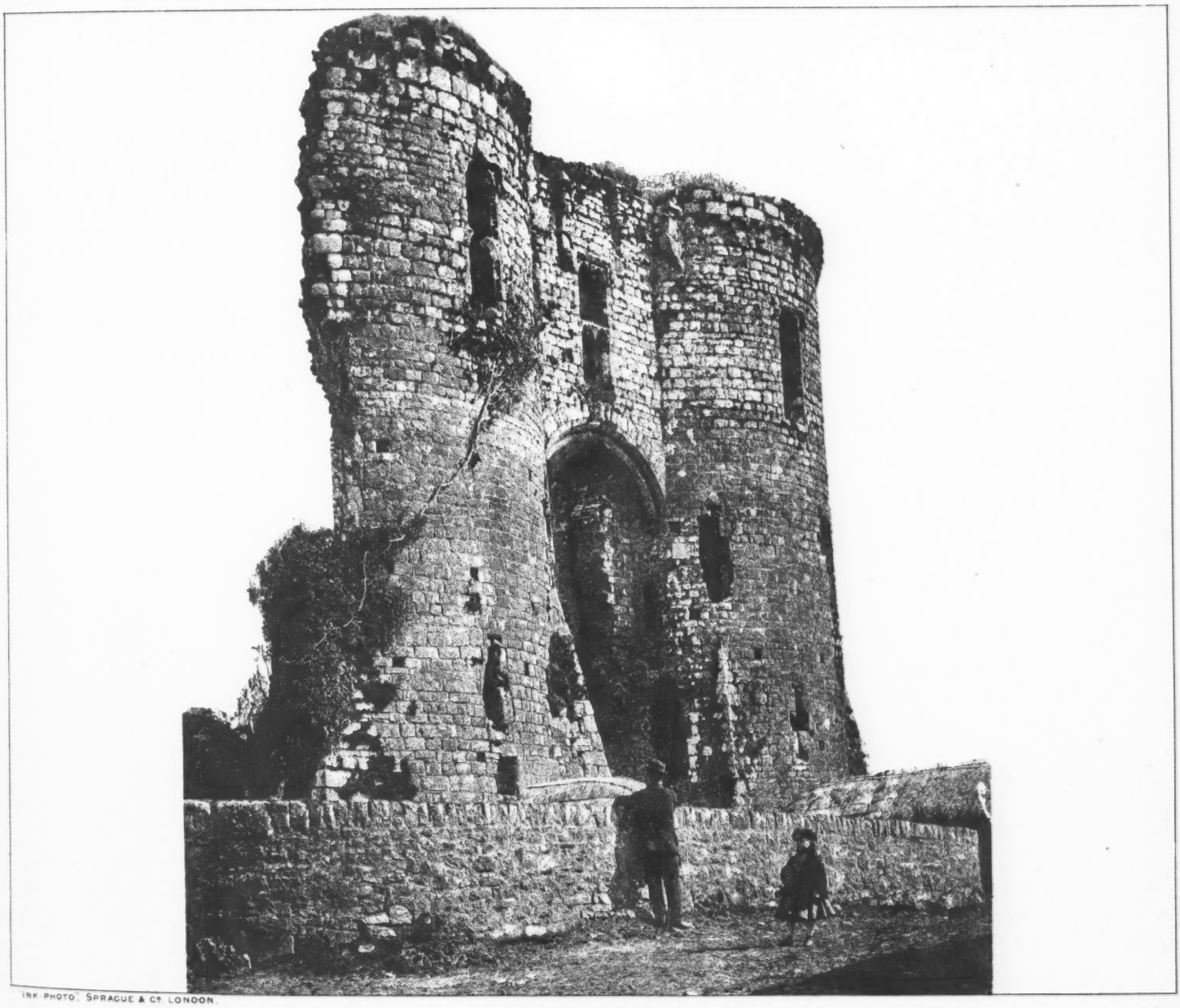
Geo. Gilbert Woodward

Mens. July. Delt. August. 1882.

C. F. Kell Photo-Lith & Printer, 8. Castle St. Holborn. London E.C.



INTERIOR OF BISHOP'S PALACE, ST. DAVIDS.



INK-PHOTO: SPRAGUE & Cº. LONDON.

GATEWAY OF EPISCOPAL PALACE, LLANHADDEN.

THE GERMAN ARCHITECTS' AND ENGINEERS' CONGRESS.

THIS annual gathering has just been held, under favourable circumstances, at Stuttgart. The usual preliminary meeting of delegates took place on the 22nd ult., and was attended by forty representatives from eighteen societies in various parts of Germany.

The subject of contracts between employers and professional men was dealt with, and, after much discussion, it was resolved not to act upon the suggestion that the settlement of the question should be postponed until the issue of the Imperial code now in preparation. Consequently, the rules will be finally drawn up within the next few months, after which they will be published. The question of normal regulations for the delivery of iron structures had given rise to preliminary expressions of opinion by fifteen societies, which, in conjunction with the reports of the Association of German Engineers and the Association of German Iron Manufacturers, afforded considerable matter for discussion. The Aix-la-Chapelle Society had, consequently, a short time ago suggested the examination and summarising of these various opinions by a joint commission of the technical bcdies interested. The assembly resolved upon reconstructing the portion of the rules of general application, and upon inviting expressions of opinion from the various local societies. The whole subject will then come before next year's congress for final discussion and settlement. Professor Fränkel, Herr Gerber, Herr Köpke, Professor Häseler, Dr. Schäffer, Professor Winkler, and Professor Weyrauch, are entrusted with the revision of the material now available.

During the last year a collection has been organised for the erection at Dresden of a Semper Monument. The total cost is estimated at 1,000*l*., and about a quarter of that sum has now been obtained. In order to second the efforts of the local societies it was resolved at the present Congress to invite subscriptions from bodies of a more general character, such as art societies, &c., in Germany, Austria, and Switzerland.

The Mid-Rhenish Society having brought to a close its researches on the subject of "Typical Forms of Dwelling-houses," the further treatment of the subject was undertaken by the Hanover Society at its own request, with a view to the publication of the materials now ready and still to be obtained. Arrangements were also made as to the publication of the valuable information now collected as to the use of glazed bricks and statistics of building. The business proceedings concluded with the selection of Dresden for next year's meeting, and of Frankfürt for the general assembly of 1886.

The first general meeting was opened by a congratulatory address, in which Herr Von Schlierholz welcomed the assembled visitors, and referred to the progress made by Stuttgart since 1858, when the Architects' and Engineers' Congress last met in that city. After Dr. Hobrecht, of Berlin, had invited the assembly to express their feelings of respect towards the Royal family of Wurtemburg, Herr Adolf Bötticher, of Berlin, gave an address dealing with the most recent investigations regarding the history of building in ancient times. The speaker was particularly qualified for such a task, having personally co-operated in the excavations at Olympia as the official representative of the German Government. His remarks bore special reference to the work done within the last ten years at Tiryns, Mycenæ, Olympia, Pergamon, Delos, and Pompeii. Mycenæ and Tiryns were discovered by Schliemann in 1876, and maps of both localities served to elucidate the detailed references made. A plan was likewise shown which represented the interesting palace at Tiryns, which was only discovered this year, and which is being treated by Schliemann in a descriptive work now in preparation. With reference to the Lions' Gate at Mycenæ, the speaker proceeded to deal with the most recent opinions as to the origin of Doric columns, which he traced back to Egypt, attributing their source to wood architecture, of which various specimens came to light at Olympia. Thus the Heraion consisted for the greater part of wood in the oldest times, its wooden columns having been subsequently exchanged for stone pillars. From this and other examples, the speaker argued that the oldest forms of Grecian houses and temples were composed of wood, at least in the upper portions. Reference was also made to the work carried on by the French at Delos, which seems, however, to have possessed less architectural value than antiquarian interest. In the same manner, the excavations at Pergamon have been more important in their results as to sculpture than architecture. With regard to Pompeian discoveries, Herr Bötticher divided the architecture of that locality into five distinct periods, each characterised by stylistic and decorative peculiarities, which were illustrated by drawings and photographs.

Professor Hubert Stier, of Hanover, gave an interesting account of the German Renaissance, remarking that for half a century one past style has been utilised after another in new buildings, the result being a more intimate acquaintance with the history of architectural forms, and with their adaptation to practical uses. The speaker remarked that his father had incorporated the German Renaissance style into his classification of the subject as early as 1854, but the first incentive to its general adoption was given by the patriotic feelings which the events of 1870 and 1871 aroused throughout the German nation. The influence of the German Renaissance was not only felt in architecture, but also extended to furniture, tissues, weapons, metal work, and various other branches of artistic industry. The weak point of the style in question would, however, seem to be its deficiency in monumental character, and to this circumstance the speaker attributed the fact that in ecclesiastical architecture the Italian Renaissance has been the leading *motif*.

The testing of iron and various kindred points were dealt with by the engineering section, in which Professor Winkler delivered an interesting address. The new buildings and harbour alterations necessitated by the admission of Hamburg into the Zollverein formed the subject of Herr Meier's remarks, from which the assembly derived a comprehensive idea of the works in progress; the completion of which is expected to take place in 1889. Dr. Dietrich's paper on "Electrical Transmission of Force" was likewise well received.

Special interest attached to the address of Herr Lange on "Building in the United States," the remarks of the speaker being founded upon personal observations made in his capacity of technical attaché to the German Embassy at Washington. Various details were given as to the Government departments for engineering and building matters which are respectively under the control of the Ministers for War and Finance. The country is divided into districts each of which is under the supervision of a chief engineer. The sum annually voted for engineering works is 3,000,000*l*. to 3,500,000*l*., of which sum about one quarter is being devoted to the regulation of the Mississippi. The building department undertakes the erection of excise offices, post-offices, judicial buildings, naval hospitals, &c., and spends about 1,000,000*l*. annually. These buildings are very solidly constructed, and are fireproof, but their cost is relatively high. In some of the larger cities the post-offices are said to cost from 1,000,000*l*. to 1,250,000*l*. each, and the New York Post-office even as much as 2,000,000*l*. As to dwelling-houses, the speaker alluded to wooden structures as still predominating in the country and in small towns, while in larger cities the external walls at least are obliged to be of brick. Amongst the special features of the internal arrangements is the frequency of passenger-lifts. Americans are fond of painting the outsides of their houses more often than is customary in Europe, the general aspect of the cities being thereby rendered cheerful. Ecclesiastical architecture is not in a satisfactory condition, according to Herr Lange's opinion; it being usual to build small churches, and the habit of placing them on an ordinary street building site was not conducive to their effect, on account of the proximity of other structures. The manner in which many architectural details are carried out is explained by the fact that wood, iron, zinc, and other materials are used in portions of buildings which bear the character of stone as to form and treatment. Some interesting facts were given as to the Tabernacle of the Mormons at Salt Lake city, and their temple, which has been in progress since 1853, and which (contrary to reports which have circulated) has nothing extraordinary in its architecture, measurements, or cost. It has now attained a height of about 90 ft. Special commendation was given to the park-like manner in which cemeteries are laid out. Finally, Herr Lange attributed the simplicity and boldness of American buildings to the indulgent nature of public criticism, on which architects can usually depend. Americans know that by increasing the responsibility of architects, their courage and inventive faculties must be affected, and that when such is the case the public really suffer a loss.

Dr. Wolpert treated a subject of general sanitary interest in his address upon "The Testing and Improvement of the Air in Dwelling-rooms and Assembly-rooms, as to Temperature, Moisture, and Purity." He explained that for living-rooms and school-rooms a normal temperature of 64° to 68° Fahr. was desirable, while a slightly lower temperature was permissible in bedrooms. At the same time he disputed the advantages sometimes attributed to sleeping in cold rooms. The normal temperature alluded to should be uniform throughout a room, there being no important difference allowable between the lower and higher portions. Various methods of arriving at this uniformity were referred to in detail.

With a view to preparing for the intended visit to the cathedral at Ulm, Herr Von Egle gave the assembly some details, both historical and technical, as to this noted work and the projects for the restoration of the tower and other portions. Works of this nature have been progressing to some extent since 1840. The success of the efforts made to raise money for the completion of the restoration has been so encouraging that it is hoped to terminate it within six years. It is contemplated to utilise as far as possible at Ulm the services of those skilled assistants who are now free on account of the completion of work at Cologne. Herr Lange gave an account of the efforts now being made for the preservation of the Rathhaus at Augsburg, and a resolution was agreed to in which the Congress expressed its approval of the scheme.

The excursions made were well attended, and proved enjoyable adjuncts to the programme. The cloisters of Bebenhausen were specially interesting from an architectural point of view, and, under the guidance of Herr Beyer and Herr Schlierholz, their various points were seen by the party under circumstances favourable to their appreciation. An exhibition of architectural drawings was held at which the ten prize designs for the Berlin Museum were shown in conjunction with other works of interest and artistic value.

In connexion with the assembly various other special exhibitions were organised, amongst which that of the Society of Industrial Art calls for particular mention. The objects shown included a vase in *rouge antique* marble, a mirror with table and a sideboard in ebony. A Japanese fire-screen and various other decorative objects are spoken of with commendation by the local press. The social festivities were on the usual scale of completeness, and arrangements were made for the visitors inspecting the various new buildings in Stuttgart under the guidance of local architects and officials. The banquet of August 26th was attended by 300 guests, and was thoroughly successful in every respect. The attendance at the Congress numbered 349.

DOINGS IN DUBLIN: BUILDING AND SANITARY.

THERE are a number of small building operations, but no public buildings of importance, at present proceeding in Dublin proper, but it is anticipated that the new Science and Art Museum will be commenced without any further delay, as Messrs. Deane & Son's plans have been finally decided upon by the Government. The history and circumstances of this project, which has been hanging fire for the last sixteen years, form a very chequered chapter in official correspondence and architectural competition, and if the whole story of ways, means, and motives were told concerning it, some singular and startling revelations would be made. The architectural features of the new building have been already described in these pages. The site is a good one, in proximity to Leinster House; the materials will be chiefly native, and,—a not unimportant consideration,—the work will afford employment to a considerable number of building artisans, who need a long spell of constant employment to make up for bad times.

On the borders of the city, the building of the

new Catholic Asylum has been commenced. The structure, which is intended for the male blind, is situated on an elevation beside a mansion known as the Castle of Drumcondra, lately the residence of Lord James Butler. Very few of the old stones of the original castle of Drumcondra,—a building the scene of some important historical transactions in the reign of Queen Elizabeth,—remain. An inscription exists which tells of the building of the old castle in 1560, and it was here the famous Irish chief, Hugh O'Neil, was married to Mabel Bagnell, the castle being then the residence of Sir William Warren. The new asylum at Drumcondra will be about 218 ft. long, and three stories in height. The style will be Gothic, and the materials of red brick, relieved by bands of dark blue brick, with stone dressings. The ground-floor comprises a refectory, 70 ft. by 26 ft.; school-room, 56 ft. by 26 ft.; class-room, 26 ft. by 26 ft.; along with printing-room, music-rooms, kitchen, stores, &c. Four dormitories will be provided on the two upper floors, each 70 ft. by 26 ft., including lavatories, bath-rooms, &c., with four cells for the Brothers in charge. The heights respectively of the floors from the ground upwards are 16 ft., 15 ft., and 14 ft. Atop there will be an attic, to be utilised for storage and work rooms. The architect is Mr. W. H. Byrne, of Dublin.

A few miles south of the city, at Stillorgan, a new Convalescent Home and Hospital is approaching completion for a religious brotherhood known as the "St. John of God." The new building will cost between 6,000*l.* and 7,000*l.*, the whole of the funds being subscribed by the mother house of the order at Lyons. The new structure is severely plain, and destitute of ornamental details, with a frontage of 135 ft. The ground-floor comprises a large hall, extending the length of the building. On the right-hand side of the hall are lavatories, two refectories, prior's room, and reception-room; and on the left are bath-rooms, apothecary's hall, and kitchen. Hereafter it is intended to prolong the hall, with portico to meet the monastic house. The second and third floors have halls similar to that of the ground floor, with bedrooms on each side. It is contemplated also to provide a chapel when funds are forthcoming.

On the site of a large abbey, which was founded at Tallaght, near Dublin, in the twelfth century, and subsequently converted into the summer residence of the Archbishops of Dublin, a new Dominican church and convent are being built. The new buildings include the church and cloisters, the west wing, with the completion and alteration of the east wing. Some years back the west wing was commenced, from the designs of the late Mr. J. J. McCarthy, R.H.A. As the locality is very thinly populated, the new church will be mostly used for conventual purposes. The facing stone is black local limestone, known as "calp," with white limestone dressings. The walls of the nave will be lined with brick, while those of the chancel and choir will have Bath stone. In accordance with the usage in Dominican churches, the choir will be situated at the back of the high altar, and will comprise fifty stalls. Over the sacristy a night choir is provided, 42 ft. by 22 ft., with arcaded opening into the day choir. The chancel and choir will show groined ceilings in oak, resting on trefoil corbelled shafts. The nave will have a wagon-headed ceiling, with arched principals. The architect is Mr. George C. Ashlin, and the contractors Messrs. Meade & Son, both of the city.

The long-proposed and urgently-needed public baths and washhouses are in course of erection in Tara-street, the site being a portion of the land taken a considerable time ago by the Corporation for the purpose of making a new approach from Great Brunswick-street to the swivel bridge over the Liffey. A loan was obtained from the Treasury, amounting to 4,700*l.* The plan omits a swimming-bath,—a rather serious omission, considering the wants of the city; but we find by a resolution passed within the last few days in the Corporation,—"That it be an instruction to the Public Health Committee to provide one or more swimming-baths as a department of the public baths and washhouses in course of erection." This, it seems, will need another application to the Treasury. Why proceed with a plan omitting an important requirement in a poor neighbourhood, and after the buildings have been commenced, begin preparing plans for the always necessary swimming-baths? The new buildings will comprise a washhouse, 55 ft. long by 40 ft. wide, accommodating about twenty persons; a drying closet, a private washhouse for the use of the establishment; eight reclining baths for men and four for women. There will also be offices, manager's residence, store and other rooms. The walls are of red King's Court brick, the front exhibiting some moulded and ornamental treatment in the same material. The plans are by the City Architect, Mr. J. Freeman.

Somewhat large and imposing business premises are in course of erection in Great Brunswick-street, for Messrs. T. McKenzie & Sons, intended for their new seed and agricultural implement warehouse. The frontage extends about 180 ft., and there will be a conspicuous entrance-porch in centre, with a series of six windows on each side on the ground floor, with dropped arch-heads. The walls will be composed mostly of King's Court bricks with Portland stone dressings and a granite string-course between ground and second story. The height of floors from bottom upwards will range respectively 15 ft., 14 ft., and 12 ft., and they will rest on iron girders supported by columns. On the left-hand side of large ground-floor will be the machinery and workshops, and on the right the seed stores. The architect is Mr. J. O'Callaghan, the builder Mr. Donovan, and the clerk of works Mr. Robert Parker. The iron work is being supplied by Messrs. Courtney & Stephens.

Among the provincial ecclesiastical churches worthy of note is that of the new church of the Trappists Brothers, at Mount St. Joseph, near Roscrea. The building is in the Early English style, with a mixture of Norman in the interior. Ornamentation was avoided as far as possible, in accordance with the instructions given, as the Order is one of those in connexion with which austerity of life and surroundings is strictly enjoined. The entire length of building is 225 ft., transept 90 ft., nave 30 ft., and side aisle 15 ft. wide; the height to apse of roof is 75 ft. Tower and spire are yet unbuilt, but provision is made for them on the south side of the transept. When finished the spire will be 220 ft. For about twelve bays in length the west end of the church is separated by a rood screen from the monastic portion, and it is to be used as a secular church. The high altar is composed of marble and Caen stone. The architect is Mr. W. H. Beardwood, of Dublin, and the works were principally carried out under the supervision of the lay brothers. The contract of the carpentry work was carried out by Mr. Maher, of Roscrea. The altars were executed by Messrs. Early & Powell and Mr. W. P. O'Neil respectively, of Dublin. The church and monastery stand in a park of 375 acres, which was presented to the Brothers by Count Moore, M.P. The new church has cost 8,000*l.*

The sanitary condition of Dublin, both north and south, still calls for increased vigilance. Although the Corporation has done some commendable work within the last two or three years, much, indeed, still remains to be accomplished. The state of the river Liffey, running through the centre of the city, is still abominable, and the stench from it during the last three months has been at times intolerable. Plans have been proposed for mitigating the almost unbearable nuisance, and the Corporation again and again return to a driftless debate upon the subject, but still little or nothing is done. In fact, the only practical remedy is the one we pointed out several years ago,—a parallel system of main drainage on each side of the river, with intercepting sewers. This system was adopted in the scheme of main drainage promoted by the Corporation some years ago, but the project at that time met with fierce opposition on the part of the citizens, on account of the great cost of the scheme, and it being out of proportion with the financial circumstances of the city at that time. The materials of sewer construction, bricks, iron, cement, &c., were, too, very high in price at the period; and these, with other reasons which need not be alluded to here, contributed to give the first main drainage project its quietus. The scheme is being revived again, and, subject to necessary modifications, it no doubt could be successfully carried through. The points of outfall for the sewage of the city, if it be resolved to run it to sea, are questions of some difficulty, on account of marine townships and watering places stretching for some miles north and south of the harbour and bay. Sewage utilisation processes have not, as a rule, proved profitable, and they have been in some instances ruinously expensive. Public health, however, is a paramount consideration, and money expended in maintaining it is money well laid out, and the cost must not be too closely scrutinised from a mere commercial point of view. In every system of main drainage dealing with the sewage matter of cities and towns the solid portion should be intercepted, and nothing but the effluent water passed into the mouth of our harbours. The present condition of the Liffey, with its many foul tributaries pouring hourly their volumes of filth into the main stream is terrible to contemplate. It is no argument to point to residents who have lived on the banks of the river for years, and to say they have not felt one whit the worse through such residence. Who can tell? It is the sheerest folly to think that any human being can live constantly for years over an elongated cesspool and continue in good health. Clergymen of every denomination, doctors, and lawyers, visitors, and disinterested folk, who can have no object in throwing blame, directly or indirectly, on the Corporation of Dublin, all are loud in proclaiming the Liffey nuisance and appealing for its abatement.

Another great evil that at present obtains in Dublin, and which has obtained for long years, is the dreadful state of many of the old tenement dwellings, wherein are housed thousands of the working classes, and the great majority the very poorest of their kind. Many of these houses were once private mansions occupied by single families, but from six to a dozen families now find refuge in them, with sanitary accommodation only adequate for one or two families. The Public Health Committee of the Corporation have of late carried out some judicious and urgently-needed arrangements in respect to a large number of these tenement houses; but the number of these dwellings is almost legion, and the state of hundreds of them still as bad as can be. We have entered the dirty yards of several of them, ascended the filthy and dilapidated staircases, and examined scores of the rooms. We will not draw fancy pictures, or exaggerate, but will simply say that many, very many, of these houses in streets north and south of the Liffey are unfit for human creatures to live in. Some poor tenants are, to be sure, very dirty, and miserably poor into the bargain; but apart from this there are a number of unprincipled landlords who own this class of property, and fatten on the rents it yields, who should receive little mercy at the hands of the sanitary authorities. These landlords ought to be made to keep their tenement property in a habitable condition, and failing them, the Corporation should take action, and, if necessary, demolish these rookeries of disease. One of the great wants of Dublin is the provision of houses at low rents suited to the needs of the very poor. Blocks of artisans' dwellings have been provided by companies, and to some extent they have supplied a want; but several of the rooms of the dwellings are occupied by a class of persons one would expect to find elsewhere. These dwellings do not meet the wants of the very poor, nor are the companies who built them particularly concerned in providing rooms for any but the better class of artisans or others who can afford to pay certain rents. Acting on the commercial principle, perhaps they are not to blame for their resolves, only that no credit should be taken on the score of benevolence and philanthropy where they exist not.

We have something more to say on sanitary questions in relation to sundry other matters in Dublin, which we must defer for another article.

Brighton.—About a year ago the building committee of the Congregational Church in Queen's-square, Brighton, received a report from their architect, Mr. Arthur Loader, that the Caen stone with which it was encased was in such a state of rapid decay that it required immediate attention. It was decided to recase it with Corsham Down stone, and the work is now in rapid progress, the contractor being Mr. J. T. Chappell, of Lupus-street, London, under a schedule, and under the immediate superintendence of Mr. Loader, architect, of Brighton; the stone being selected from the quarries of Messrs. Pictor, of Bath.

ILLUSTRATIONS OF RECENT PATENTS.

5,845, Improvements in Chimney-Pots. Edwin Samuel Romilly, London.

This invention is designed to improve the chimney-pots of earthenware or metal, such as are ordinarily used for the terminal of chimneys. The upward draught of smoke and heated air is promoted, and by a peculiar arrangement down-draughts are entirely prevented. The terminal is fixed in the ordinary way. The upper end of the pipe or pot is made conical, the smallest end uppermost, and round it a second tubular pipe, slightly conical, is fixed, the lower end of which either forms a part of the inner pipe or rests and is fixed on a ledge or flange formed round the inner pot at or below the point where the conical part of the latter commences. An annular space is thus formed round the conical part of the inner part of gradually increasing area as it rises, and into the lower part of this space openings are made through the outer pot,—these being preferred of a triangular shape, as shown on the drawings. Fig. 1 shows a vertical section,

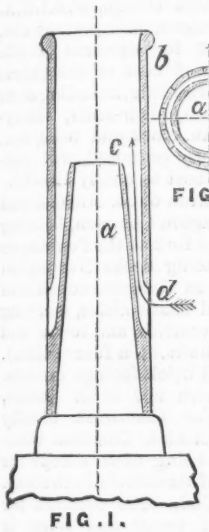


FIG. 1.

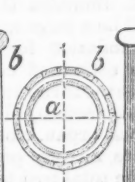


FIG. 2.

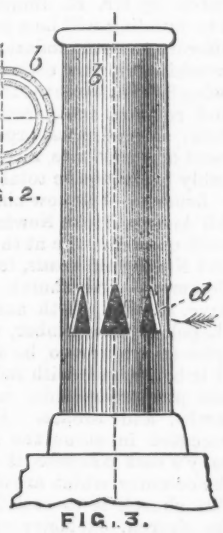


FIG. 3.

Fig. 2 a horizontal section, and Fig. 3 is an elevation of the improved chimney-pot: *a* is the inner pot conical at its upper part; *b* is the outer pot or tube, the two pots being shown made in one piece; and *c* is the annular space between them increasing in area at its upper end; *d* the openings through the outer pot, *b*, into the lower part of the space *c*.

The air or wind blowing from any direction against the chimney-pot enters the apertures upon the same side into the lower part of the annular space, and is there directed upwards, as shown by the arrows round the inner conical pot *a*, inducing an upward current through the latter and up the outer pot *b*, thus accelerating the upward draught in the chimney. Should the escape of the smoke be temporarily obstructed by currents of wind, or a downward draught caused, the smoke will escape through the apertures *d* rather than down the conical pot *a*. Particular attention has been given by the patentee to the points in the ordinary chimney-pot. The improved form may be made in suitable material,—terra-cotta, earthenware, or metal,—and may be ornamented. Fig. 4 shows a form wherein the openings

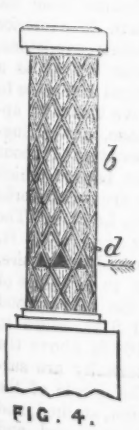


FIG. 4.

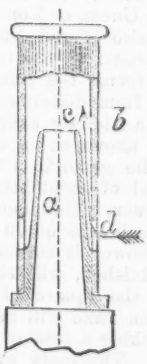


FIG. 5.

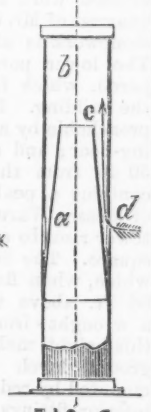


FIG. 6.

are so arranged as to be unnoticeable at a little distance. Several alternate forms are suggested, and in fig. 6 the pipes are shown of metal, the inner one being riveted or bolted to the outer one, *b*. These chimney terminals are also adapted to the chimneys of marine or other boilers, furnaces, &c.

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711. Improvements in Fasteners for Window-sashes. George Bisley, Rotherhithe.

The object of this invention is to secure a close and secure joint, such a one as will close the windows fast, and prevent rattle, and furnish additional security by being difficult to interfere with from the outside. In the drawings, fig. 1 is the plan, fig. 2 front, and fig. 3 a side elevation, and by

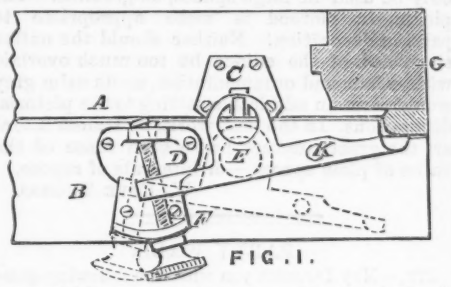

FIG. 1.

a comparison of these drawings, the action of the window lock will be easily understood.

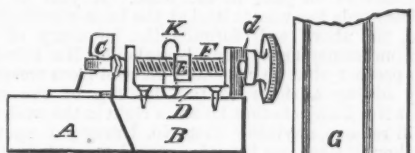

FIG. 3.

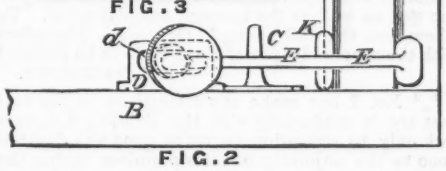

FIG. 2.

A and B are the two meeting-rails of the sash-frame G. The improvements consist of a pin, stud, or hook (C), fixed on rail A, provided with a recess or shoulder, as shown, into or over which slides or falls the eye or equivalent of a lever E, resting on the other sash-rail, one end of such lever E abutting against the sash-frame, as shown; the other formed with a screwed eye or nut, and operated by a screw bolt, or pin, F, passing through the said eye, and working in a slot, D, of the frame or stand, D, secured on the sash-rail, B. The screwed bolt being operated from one rail, brings the long end of the lever, E, against the sash-frame bead, its eye being over the notch of the hooked pin, C, on the opposite rail, so that the sashes, being previously in place, with their meeting-rails in position, they are firmly secured, and held steadily together. When it is desired to open the sash-frames, the lever, E, is loosened by the screw, F, and its eye removed from the hooked pin, C, when the lever assumes the position shown in the plan by the dotted lines in fig. 1. The lever may be supported on a pin or knob, K, which is provided on both sides, so as to render the fastening suitable for use at either side of the sash.

8,245, Manufacture of Wall Paper. J. A. Turner, West Gorton.

This invention has for its object the manufacture of wall-papers that shall have a waterproof back surface, so as to withstand the action of moisture in the walls, and that shall also be of sufficient strength and substance to enable them to be hung up without being cemented to the wall surface. For this purpose the wall-paper, after it has been printed upon, is coated at the back with a suitable waterproof cementitious substance, such as vegetable pitches. To such prepared surface is applied a sheet or backing of either paper or woven fabric, such as cotton, cloth, or canvas,—the paper or cloth being applied to the surface in any suitable manner, but by preference by passing the same while hot between pressing rollers, both the wall-paper and the backing being drawn in continuous lengths from rolls on which they are wound. In some cases the cementitious matter is applied to the paper or cloth backing, or to the backing only. In employing embossed wall-papers for the purpose of this invention the back surfaces of the embossed parts may be filled in flush with the cementitious substance, whereby the front surfaces of such parts will be protected against injury.

INDUSTRIAL REMUNERATION CONFERENCE.

THE following is the more detailed statement of the views of the Committee in regard to this proposed Conference, referred to in our "Notes" (p. 348, *ante*):—

"The Committee are desirous of carrying out the objects of the trust by obtaining the fullest information possible as to the actual working of our present industrial system.

They are anxious to procure from all available sources accurate information, so far as possible in a statistical form, as to the money wages, command of the comforts of life, health, savings, and general condition of those engaged in different industrial employments within the country, and they would invite all persons disposed to assist them to communicate any information and any suggestions bearing on these points, to the Rev. W. Cunningham, Trinity College, Hon. Sec., before the end of October, 1884.

They also intend to organise a Conference, in which it is hoped that artisans and co-operators will be largely represented, as well as employers of labour and persons interested in the study of social problems; at this Conference such points as the following will be brought forward for discussion:—

1. The existing system by which the products of industry are distributed.
2. Do any artificial and remediable causes influence prejudicially
   (*a*) The stability of industrial employment?
   (*b*) The steadiness of rates of wages?
   (*c*) The well-being of the working classes?
3. How far, in what manner, and by what means would the more general distribution of capital or the State-direction of capital, contribute, or not contribute, to
   (*a*) An increase in the products of industry?
   (*b*) The well-being of the classes dependent upon the use of capital? (Co-operative production, profit-sharing, &c.)
4. How far, in what manner, and by what means would (1) a more general ownership of land (peasant proprietorship), or of an interest in land (tenant right); or (2) the State-ownership of land conduce, or not conduce, to
   (*a*) The increased production of wealth?
   (*b*) The welfare of the classes affected by the change?
5. Does existing legislation, or the incidence of existing legislation, affect prejudicially
   (*a*) The production of industrial wealth?
   (*b*) The well-being of the classes engaged in the production?
   (*c*) The natural or the most beneficial distribution of the accumulating products of national industry (including Succession Duties, Friendly Societies, Insurance, &c.)?

Can any of these be promoted by changes in existing legislation or taxation?

They intend to arrange for one or more papers on each subject, and addresses from one or more selected speakers, and hope to have also short speeches from those members of the Conference who have special knowledge on any particular point raised in the papers.

Trade societies, or other bodies desiring to be represented by delegates at the proposed Conference in January, 1885, and authors who may desire to contribute papers, or to furnish statistical information bearing on these subjects, are requested to communicate with the Rev. W. Cunningham, Trinity College, Cambridge, before November 1st, 1884."

IMPROVEMENTS IN STOCKHOLM.

FROM the office of the Grand Governor at Stockholm a report has been issued on recent improvements effected in that city. In the first place, as to the Northern Ethnological Museum, it is pointed out that this valuable and interesting collection has hitherto been located in the principal street of Stockholm, where, for want of a suitable building for its reception, it has been divided amongst several small low houses adjoining each other. A grant of land for the erection of a permanent museum has been made by the Crown in the Royal Park, called Djurgarden, just outside the town, and five prizes have been offered for competition amongst native and foreign architects, who have thus been encouraged to send in plans. The first prize (1,530 kronor) has been taken by a Karlsruhe architect, an extra prize of 1,000 kronor being awarded to one at Dusseldorf. The museum already possesses a building fund of 100,000 kronor, but much more is required for the handsome edifice which it is intended to erect, and public appeals are being made for contributions.

In regard to general improvements in Stockholm, it may be noted that in 1876 the total length of the streets of that city was 38,420 Swedish feet; in 1881 it had increased to 389,878 ft., or over sixty-five English miles, and considerable sums have been expended yearly in repairing old streets. The result has been that unsightly and disagreeable cobble paving stones have nearly disappeared, and have been replaced either by cut stones or by Macadam and asphalte. The cleaning of the streets is, moreover, greatly facilitated by these changes, and a general improvement in their appearance is already discernible. The water supply has also increased considerably since 1876; the pipes have been lengthened from about forty miles to sixty miles, and two new reservoirs have been erected in the north of the town, and hold very large quantities of

water. The drainage of Stockholm has likewise undergone great improvement. Not long ago all the liquid sewerage of the town was carried away by open gutters; the streets became consequently impregnated with impurities, and the air filled with poisonous evaporations during winter months; the gutters, moreover, froze, and great expense had to be incurred in keeping them free of ice. After the improvements introduced in the Stockholm waterworks, plans have been made for adopting the self-cleansing system of underground drainage, through glazed earthenware pipes.

The progress of these works has been very slow, as nearly the whole of Stockholm is built upon solid rock, but most of the principal, and all the new streets of the town are drained on the new system. Formerly the landlords were responsible for the scavenging of those parts of the streets which were opposite their houses, but this old custom has been entirely done away with in the chief quarters of the town since the formation of a scavenging company, and the cleanliness of the streets has yearly improved. The town has also been considerably embellished during recent years by improvements in the public squares and gardens. Those especially worthy of notice are the gardens of Humlegarden, which now form one of the prettiest and most agreeable quarters of the town. They were formerly used as royal pleasure gardens, and were not open to the public until 1820. The grounds then fell into disorder, and became the haunt of low and disreputable people. In 1870 the municipality, after repeated appeals, succeeding in renting the ground from the Crown, and in 1877 they were presented to the city by the King. Since then Humlegarden has undergone extraordinary changes, and is now a great ornament to the town, and is situated in the centre of the new quarter which has sprung up within the last ten or twelve years.

THE DOME OF ST. PAUL'S.

SIR,—No one, I think, can contemplate the dome of St. Paul's at the present moment without concurring in your opinion that Thornhill's work is, in the main, the proper thing:* it is simple and grand in its arrangement, and hits the *viâ media* between the project of an open empyrean flecked with clouds and angels, setting no limits to a dome as an architectural feature, and the other extreme of cutting it up into panels and plaques. There can be no doubt that architectonic decoration,—the application of art to public buildings,—is a *métier* in itself over and above that knowledge and technical skill essential to the success of a painter of easel pictures. Thornhill had had considerable experience in that kind of work, although his art was by no means of transcendent quality. Moreover, as Wren's intimate and colleague, his design for the dome must have had Wren's approval and sanction. This is an important consideration. There is another point, too, that ought not to be overlooked, viz., that both the architect and the painter would, if time had permitted it, have introduced colour into the decoration of the dome. It appears to me, therefore, that the right mode of bringing the decoration of this portion of the cathedral to completion would be to translate Thornhill's figure-subjects into colour, and to introduce gold grounds for the open sky spaces in those designs. This treatment would, in its results, produce a magnificent effect,—an effect that, I would venture to affirm, would be unrivalled by the decorations of any other church in Christendom. In graciously and modestly consenting to be yoked to Stevens's car, in the present experiments, the two eminent painters have manifestly done themselves an injustice. They would have succeeded perfectly, in all probability, if they had been untrammelled and left free scope.

There is another matter with respect to the embellishment of the interior of St. Paul's that requires reconsidering. It is questionable whether that extensive picking-in of mouldings and other ornaments is compatible with the grand style of ecclesiastical decoration, more especially when pictorial art is to be extensively adopted. In this case gold should only be used in large spaces, as grounds. The picking-in method is more appropriate to palatial decoration. Neither should the native stonework of the edifice be too much overlaid with colour and ornamentation, as its calm grey would form an admirable setting to the pictorial decorations. In the best works of Italian mural art the great painters had a keen sense of the value of plain spaces,—of intervals of repose.

W. CAVE THOMAS.

* We did not quite say that; we said that of the three designs now visible it appeared to us the best in general character for that kind of treatment,—*i.e.*, dividing the dome by vertical divisions. This, of course, only in regard to general design: we neither want Thornhill's detail nor his dingy monochrome tone.—ED.

PARTY WALL.

SIR,—May I trouble you with the following question? A row of houses was built some thirty years ago on lease, having at the back a boundary-wall delineated on plan in the lease. A year or two afterwards the vacant land at the back was also built on, the above wall forming the boundary of the second owner's property. Leaseholder No. 1 desires to protect what he considers his wall from trespass, by adding a ridge to the flat top of the wall, but No. 2 objects that he has a right in the wall, and will remove anything that No. 1 may put upon it, although what was intended would prevent decay of the wall as well as the trespass complained of. To whom does the wall belong? Or can No. 2 interfere with the supposed right of No. 1 to do as he pleases?

A LEASEHOLDER.

*** No. 1 can make any alterations in the wall that are in conformity with the Building Act, subject only to obligation to make good any damage done to the adjoining owner's premises during the alterations.

RESPONSIBILITY FOR ACCIDENTS TO WORKMEN.

SIR,—Can any of your correspondents say who is responsible for accidents to workmen? An employer (not a builder or contractor) providing scaffolding and material, or a contractor for labour to brickwork at per rod?

SURVEYOR.

PROVINCIAL NEWS.

Berkhamstead. — The new building lately erected from the designs of Messrs. Batterbury & Huxley, architects, of Berkhamsted and John-street, Bedford-row, London, for the London and County Banking Company (Limited), has been opened for business. The work was carried out by Messrs. Taylor & Grist, builders, Aylesbury.

King's Lynn.—The King's Lynn Board of Guardians have resolved to take immediate steps to carry out entirely new drainage and sanitary arrangements for their workhouse, as designed by Mr. E. G. Mawbey, the borough engineer, the plans having received the approval of the Local Government Board. The system of drainage is, as far as possible, provided with means of inspection, ventilation, and automatic flushing.

Nottingham.—A new reservoir at Mapperley Plains, in connexion with the water supply of Nottingham and surrounding district, has recently been opened. Its interior measurement is 150 ft. by 150 ft., and it will hold about 1,500,000 gallons of water. From the floor to the overflow is 13 ft. There are 212 supporting arches which divide the whole of the interior into fourteen bays and fourteen principal arches. The walls, which are 4 ft. 3 in. thick at the bottom and 2 ft. 3 in. thick at the top, are backed by a battering of clay, varying from 2 ft. 6 in. to 7 ft. 6 in. thick, so as to render the surroundings perfectly water-tight. The first 7 ft. from the foundation upwards is built in Portland cement mortar, and the whole of the remainder of the work, with the exception of the principal arches, is built in ground hydraulic mortar. The floor is composed of concrete, 9 in. thick, and underneath this is 15 in. of clay on the top of the virgin foundation. The surface of the concrete is finished off with a coating of pure cement, which really forms the floor of the reservoir. The arches of the reservoir are covered over with punned clay, 18 in. thick, and above this there is 12 in. of soil. There is a system of ventilation by means of fourteen specially manufactured ventilators, and by this means the air finds continued access to the surface of the water. To give an approximate estimate of the magnitude of the undertaking it may be mentioned that 1¼ million of bricks have been used; from 250 to 300 men have been employed, and about 120 horses and carts have been in requisition. The work has been carried out under the direction of Mr. Tarbotton, chief engineer to the Corporation, and his assistant, Mr. Wharton, Mr. Phillips acting as clerk of the works. The contractor was Mr. T. Smart, of Trent Bridge, who completed his contract a month under the specified time. The bricks used are hand made, and are from the works of the Nottingham Patent Brick Company, and all the "springers" and "stops" are specially made bricks. The clay "puddle" has all been supplied from the best beds of Bulwell clay. The reservoir, which has cost something less than 6,000*l.*, is intended to supply Carlton and Netherfield, and from its elevated position will improve the high level supply of the borough of Nottingham.

CHURCH BUILDING NEWS.

Liverpool.—St. Dunstan's Church, Edge Hill, is about to be commenced, from designs prepared by Mr. H. Roumieu Gough, F.R.I.B.A. The building will be a large and important one, affording accommodation for upwards of 800 worshippers, the estimated cost of the fabric being 8,000*l.*, while the furnishing, including altar and reredos, font, lectern, choir-seats, litany-desk, stained glass, organ, clock and bells, &c., most of which are already promised, will probably bring up the total cost to nearly 12,000*l.*

London.—The new church of St. Michael and All Angels, Stoke Newington Common, is being built on a fine site at the fork of the Fountayne and Northwold roads, facing Stoke Newington Common. The church as designed consists of nave, chancel, north and south aisles, morning chapel, organ-chamber, vestries, and tower and spire (the latter to be built at a future time). It is being built with red brick facings outside, and plastered inside, with red brick quoins, jambs, and arches. For the work usually executed in stone the Albion Concrete Company's cast concrete is being used, except for the columns, which are of Sumsion's Bath stone. The church is to seat 750. The contract for the church, exclusive of tower and spire, is 5,242*l.* It is being built from the designs and under the superintendence of Mr. J. E. K. Cutts. The builders are Messrs. Holliday & Greenwood.

Peel (Isle of Man).—The new church at Peel, Isle of Man, was opened on the 25th ult. by the Archbishop of York, who spoke of the new building as being "possibly the future cathedral of the diocese." The church, which is cruciform in plan, consists of a nave, 96 ft. by 21 ft.; north and south aisles, 70 ft. by 12 ft.; north and south transepts, 32 ft. by 24 ft.; chancel aisle, 23 ft. by 17 ft.; chancel, 38 ft. by 21 ft.; organ-chamber, 18 ft. by 18 ft.; vestry, lavatory, meter-room, north and south porches, and tower. It is of the Early Decorated style of Gothic architecture, boldly and freely treated. The walls are composed of the Peel red stone, in courses of varied thicknesses, and the whole of the dressings to windows and doors, also the quoins, tracery, spire, and other dressed work are of red sandstone, from the quarries of Mr. Guest, of Runcorn. The interior stonework is also of red Runcorn sandstone. The lower portion of the tower serves as a porch, which forms the principal entrance to the building. Immediately above this, and approachable by a winding staircase, is the ringing-floor; and above, at an elevation of about 50 ft. from the ground, is the belfry, which contains a peal of eight bells from the works of Messrs. Warner, bell-founders, London. The tower rises to a height of 70 ft., and is 18 ft. square. The tower is surmounted by a spire, which, when finished, will rise to a height of 86 ft. above the square of the tower, and a wrought-iron vane will add 8 ft. more to this height, making a total of 164 ft. above the ground level. The roofs externally are surmounted by red ridge tiles. The whole of the interior fittings are of pitch-pine, stained, and polished. The roofs are open-timbered, and also of pitch-pine. The chancel roof is wagon-headed, with the interior panels of pitch-pine. The whole of the glazing was executed by Mr. T. Holt, of Liverpool. The church is warmed by the hot-water system of Mr. George Kneale, of Liverpool. The whole of the carving was executed by Messrs. Norbury & Co., of Liverpool. The encaustic and tile-work has been executed by Messrs. Chantrell & Son, of Liverpool. The font is of Caen stone, supported on marble columns, and stands at the west of nave in the centre. The pulpit is of Caen stone, with bands of red sandstone,

with marble shafts and carved panels and spandrils. The reredos is of Caen stone also, with richly diapered panels, gilded on the main lines. The reading-desk is of oak. The gas-fittings were executed by Mr. A. Bucknall, of Liverpool, and are a very good sample of art-metal work. The fixing of these, as well as the gas and water mains, was entrusted to Mr. Kermode, of Peel. The fittings of the church have already been mentioned in these columns. The contract was taken by Messrs. D. Anderson & T. Radcliffe, of Peel, Mr. Clague being the foreman mason. The architects are Messrs. Thomas D. Barry & Son, of Liverpool.

Darwen.—The new Mission Church of St. Barnabas, in the Culvert District of St. John's Parish, Darwen, has been opened. The church is simple in outline and construction, being under one continuous roof; breaks in the outline being obtained by the reduced widths of the eastern and western bays forming the sanctuary and baptistery respectively,—by continuing the roof over the projecting porch and vestry,—and by a large gabled dormer on each side. The total width inside is 31 ft., and the total length from west to east wall 101 ft. The height to the wall-plate of the nave being 14 ft. The roof, which is covered with green slates, is framed with collar-beam principals with moulded curves, the one over the entrance to the chancel and the remainder of the chancel principals being marked by posts carried down to the floor, betwixt which are framed the balustered screens which partition off the chancel from the organ-chamber on the north side and the vestry on the south side. The walls are built of local stone, faced outside with broken-coursed rubble, and on the inside with Bolton pressed red brick, pointed. The passages are laid with flags, and the chancel with simple patterns of plain and stamped tiles. The windows are of wood with wood casements glazed with lead-lights, except the east window, which is of stone. The nave seats are of pitch-pine, varnished, and the chancel stalls are of yellow pine, painted, as also are the pulpit, altar-rail, and lectern. The font is of Halifax sandstone. There is an open-framed bell-turret on the ridge of the roof close to the west wall. The heating is effected by hot-water pipes and coils on the low-pressure system, the engineer being Mr. C. Seward, of Preston. The architectural style is Gothic in character, and the aim has been to adapt the principles of ecclesiastical architecture to the simplest forms of construction, and at a very low cost, the cost per sitting being under 3*l.* The total accommodation is 350. The contractors for the various works, who are all of Darwen, were as follow:—Messrs. J. Orrell & Sons, masons' work; Mr. L. R. Marsden, joiner's work; Mr. Holden Baron, slater's work; Mr. R. Jackson, plasterer's work; Mr. H. C. Jepson, plumber and glazier's work. The architects are Messrs. Paley & Austin, of Lancaster.

Old Shoreham, Sussex.—Certain alterations to the ancient Parish Church of Old Shoreham, Sussex, are in contemplation. Plans and estimates have been submitted by Mr. Arthur Loader, architect, of Brighton.

DISSENTING CHURCH-BUILDING NEWS.

York.—The new Wesleyan chapel in Clarence-street was opened on the 13th ult., by the Rev. F. Greeves, D.D., president of the Wesleyan Conference. The chapel is in the Italian style, and is built of pressed bricks, from Messrs. Williamson's, near Hull, with stone dressings from Bradford. The columns of the portico are of polished grey granite. The interior is fitted up throughout in varnished pitch pine. The ceiling is divided into panels, and enriched with ornament. The organ recess has Corinthian pilasters and enriched entablature. A portion of the windows are of stained glass, by Messrs. Winfield (late Camm Bros.), Birmingham. Accommodation is provided for 830 persons, including free seats. There are also four large vestries or classrooms. The total cost of the building, exclusive of boundary-walls, has been about 3,000*l.* The contractors are Mr. Swalwell for stone and brick work; Messrs. Bellerby for painting; Messrs. Walker for heating, all of York. The joiners' work has been executed by Mr. Deacon, of Shipley; the plasterers' work by Mr. Dixon, of Bradford; the plumbers' work by Mr. G. Thompson; and the slaters' work by Messrs. Pycock, both of Leeds. The gas-fittings and railings have been supplied by Messrs. Freeman & Collier, of Manchester; the ventilation by Messrs. Hill & Hey. of Halifax; and the carving by Mr. R. Boys, of Leeds. The architect is Mr. W. J. Morley (now Morley & Woodhouse), of Bradford and Bolton.

Freckleton (near Preston).—Memorial-stones of a new Wesleyan chapel were laid on the 30th ult. The chapel will accommodate 275 worshippers, and the style adopted is English Renaissance, the materials employed being patent bricks and Longridge stone. A new Sunday school, in connexion with the above chapel, was opened on the 31st ult. The entire cost will be about 1,500*l.* The architect is Mr. David Grant, of Preston.

Douglas (Isle of Man). — The foundation-stones of a new Wesleyan chapel here were laid on the 27th ult. The building will occupy a position at the angle formed by Rosemount and Buck's-road. The tower is placed at the corner of the site. Galleries are carried round three sides of the chapel, and the total accommodation is for about 900 worshippers. The building has been designed in the style of English Gothic which prevailed about the end of the thirteenth century, by Messrs. William Waddington & Son, architects, of Manchester and Burnley, under whose supervision the various works will be carried out by Messrs. Kelly & Preston, contractors, of Douglas. The cost of the chapel, omitting the higher stages of the tower and the spire, will amount to 6,000*l.*

The Student's Column.

HINTS FOR THE STUDY OF THE HISTORY OF ARCHITECTURE.—XI.

THE RENAISSANCE.

EXCEPTING in Oriental nations, it would appear that human nature cannot exist without change of fashion, or, rather, it cannot resist the temptation of following such a change when it has been set in headquarters. Now, Italy was, at the time that we reached in the last article, the spiritual as it had once been the imperial capital of Europe, and in Italy there was, about the middle of the fifteenth century, a revival of classical literature.

Fergusson has written, as a companion to his Handbook, a "History of Modern Architecture," 1862, 1 vol. 8vo., in the introduction to which he remarks that, although the great bulk of the clergy throughout the whole of the Middle Ages could read Latin with facility, it was not till the age immediately preceding the fall of Constantinople that the existence of the great literature of Greece became known in Western Europe; but when Petrarch and Boccaccio first became acquainted with its beauties, they naturally lauded their discovery to the skies, and incited those who could not read Homer and Demothenes in the original Greek to study their echoes in Virgil and Cicero.

Then this revival of letters opened the eyes of the Italians, and especially the Romans, to the beauties of the equally ancient architecture in their midst. And it was but natural that they should crave for a return to this their natural style; and so the fashion was set.

As opposed to stagnation, change is healthy; and up to this time the continuous changes that we have been watching were the results of gradual progress,—attained by *general* as opposed to *individual* efforts,—in working out the problems of building, as they successively arose. Fergusson calls these results the true styles of architecture; all those subsequent to the Renaissance, or new birth, of Classic art he calls the copying or imitative styles.

Even in these, however, a distinction is to be noticed. Up to the beginning of the present century Classic art was *adapted*, or diluted; since then both Classic and Gothic have been *adopted*, or swallowed whole. Fergusson distinguishes these two systems as the Renaissance and the Revival respectively of former styles, and it must be admitted that he takes a pessimist view of both, so that there is not much consolation to be derived from his pages. More hopefulness may, however, be permitted to practising architects than to even such an eminent critic as he is.

To begin, then, with the Renaissance in Italy, it will be easily understood that the seed fell on very receptive soil, as the Italians had not shown very much sympathy with Gothic art; but, even during the eleventh century, produced such churches as St. Miniato at Florence, which, says Fergusson, are more Classical in plan, and,—as their ornaments are generally borrowed from ancient buildings,—far more so in detail than many of the buildings of the Renaissance period. That, however, which distinguishes Renaissance buildings is their being *wilful* adaptations of past styles and being the production of *one* individual mind, and of that mind only. The consequence is that we shall now come across a multitude of names of men as well as of buildings, or portions of buildings, So-and-So having designed one part and So-and-So another part.

The first of these architects that we read of is Brunelleschi, born at Florence is 1377, died 1444. He found a job ready to hand in the completion of the great octagon of the cathedral. No drawings had been prepared for this, though probably it would have been completed by a series of retreating stages like that at Chiaravalle (Fergusson's Handbook, page 775), a form which, in fact, survived in many Renaissance churches (see Strack's and Laspeyre's works on Italian churches), but our architect was fired with the desire to do something quite different; so off he went to Rome to study "the antique," and on his return in 1420 erected the huge dome that is illustrated on page 121 of Smith's "Gothic and Renaissance." Another famous example of his work in Florence is the Church of St. Spirito, illustrated in plan and section by Fergusson ("Modern Architecture," pp. 41, 42), in which we find a fragment of the entablature placed on each column under the springing of the pier arches, a custom which became common, and which Fergusson deplores, as it was a return to a meaningless feature which had been carefully avoided in the buildings of the fifth and sixth centuries.

Besides churches, Brunelleschi appears to have designed,—or to have been consulted about the Riccardi Palace (1430) and the Pitti Palace, both at Florence. These are illustrated by Fergusson (page 84) and Rosengarten (page 379). The somewhat similar Strozzi Palace, designed by Cronaca, 1489, is illustrated by Smith on page 169, as well as by Rosengarten, and all these palaces have a strong family likeness. There is a good deal of "rusticated" walling about them, their windows are "two-light," comprised under a partly pointed arch, and are, so far, Gothic; but these palaces finish up with a huge classical cornice, that is well-proportioned to the height of the wall. The next palace illustrated by Fergusson, namely, the Rucellai, designed by Alberti in 1460,—therefore rather earlier than the Strozzi,—exhibits the introduction of the Classic orders, which became the bugbear of so many Renaissance architects. They could not tear themselves away from their tormenting rules, and their chief ingenuity is displayed in making the best of them. For instance, Sansovino may be said to have "scored" when he surmounted two stories of orders with an entablature proportioned to the two together, in the Library of St. Mark at Venice, from which our Carlton Club is copied; and Palladio, who is looked upon as such an authority as to have "Palladian architecture" named after him, obtained another brilliant victory over two orders which had to be respectively adapted to the lofty nave and lower aisles of St. Giorgio Maggiore at Venice. This *coup de grâce* consisted in raising the latter order on pedestals (see Fergusson's "Modern Architecture," page 75). This same master, however, is responsible for what Fergusson selects on page 28, as an example of all that is abominable, namely, the Valmarina Palace, Vicenza, where a five-storied building is intended to look like one great hall, by means of one huge order, which is "treated" in various artful ways, but without success.

The same use of a gigantic order is found at St. Peter's at Rome, a building which passed through the hands of several designing architects. First of all, Pope Nicholas V. began, from the designs of Rosselini, an enormous building, which, however, was only raised a few feet out of the ground when the Pope died in 1454; and the matter rested till Pope Julius II. instructed Bramante to proceed with the building, and a foundation stone was laid in 1506. On the death of this pope in 1513, and of his architect the next year, Raffaelle, better known as a painter, was called in; it was then found that Bramante's piers were not strong enough for their work; Raffaelle died in 1520, apparently without having forwarded the building,

and was succeeded by Baldassare Peruzzi, who altered the design for the building from a Latin to a Greek cross, but died in 1536, before much was done, and was succeeded by the celebrated Antonio San Gallo (not to be confused with Giulio di Sangallo), who made an excellent design, illustrated by Fergusson on page 56, but who had to devote all his time to remedying the defects in construction introduced by his predecessors; and, on his death in 1546, the control of the works fell into the hands of the great Michelangelo, to whom we certainly owe the form of the dome, and probably the ordinance of the whole interior. However, he left the building unfinished, and on his death in 1564, Fontana proposed certain alterations, and it was suggested that the Latin cross plan should be reverted to. This was finally carried into effect by Maderno, and thus the main building was complete. About the year 1661 Bernini added the piazza, with its circular porticos and fountains.

This history of St. Peter's well exemplifies the recognition of the several designers of Renaissance buildings or portions of buildings, and the importation of a *personal* element into the work, and must serve as a sample of the numerous architects employed in and about Rome. The best special work to study on this subject is Letarouilly's "Édifices de Rome Moderne," 1840, 3 vols. fol.

For the buildings in Florence, some of which have been mentioned, the student should consult a work by Gauthier, and mark the distinction between the styles in the two cities.

This same author, Gauthier, has produced a fine book on the very distinct work to be found in the hill-side city of Genoa, "Les plus beaux Édifices de la Ville de Gênes et de ses Environs," 1818, 1 vol. folio. In this book the skilful adaptation of Classic work to the peculiarities of the site will excite admiration. The staircases rising from the street-front level of some of the palaces, and thence to internal landings, and thence again to the back, where they are seen emerging on to hanging terraces and gardens, and all contrived apparently without effort or hitch in their dignified architecture, have been called by Professor Roger Smith the "very poetry of planning."

Venice, again, has its special author, Cicognara, who published a fine work on the buildings of that city in 1838, 2 vols., folio. Here, again, the peculiarities of the site have wrought their influence on the building. There have been many beautiful predecessors in the Mediæval palaces, with their traceried fronts, so enthusiastically dwelt upon in Ruskin's "Stones of Venice." This lightness of treatment survives in the Vendramini Palace, illustrated on p. 93 of Fergusson's "Modern Architecture," and there is a playfulness of outline in most of the Renaissance buildings here, contrasting pleasantly with the more formal buildings of Rome.

For the building of Lombardy, Paravicini's folio work should be studied. In Milan, Bramante's so-called dome of Sta. Maria delle Grazie is a very refined piece of architecture, untroubled by colossal orders; and there is the Great Hospital, begun in 1456 by Filarete, and continued by Bramante, whose design was finally completed by Richini in 1621. The chief beauty is in the internal courtyards, consisting of two stories of arcades, supported entirely by columns, without any alternating piers.

Mantua has its Palazzo del Té, of which not only the architecture but the painted decorations were carried out by Giulio Romano and his pupils. The subjects selected for these fresco paintings mark the complete change that had come over popular taste since the days when Giotto painted the chapel of the Arena at Padua. If a knowledge of classical mythology be urged as an excuse for them, they are hardly worth the excuse. However, these articles are on architecture, and not on morality.

At Turin, one of the earliest architects we read of is Guarini (born 1624, died 1683), by whose time architecture had become theatrical in its style.

At Naples, the Caserta Palace, by Vanvitelli, is the largest and most nobly decorated palace executed in Italy since the Renaissance, but it will be seen from Fergusson's illustration, p. 128, to be extremely monotonous.

In the next article, the more interesting combinations produced out of Italy by the new style will be considered.

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

Aug. 29.—11,764, H. E. Clark, London, Manufacture of Fire-guards, Window-blinds, &c.

Aug. 30.—11,782, J. Hall, Sheffield, Automatic Whitewasher for Ceilings.—11,814, H. R. Butson, London, Lavatory Apparatus for Schools, Barracks, Prisons, &c.—11,822, G. D. Peters, London, Window-sashes.

Sept. 1.—11,849, S. Lloyd, London, Folding Fire-lighters.

Sept. 2.—11,867, R. H. Holme and U. F. Arveschong, Newcastle-on-Tyne, Tipping Ash-pan.—11,889, A. Mackie & J. Mackie, London, Ventilation of Buildings.—11,890, W. H. Page, London, Construction of Buildings.

Sept. 3.—11,919, W. H. Blackwell, Manchester, Sashes for Windows.—11,926, G. Cresswell, Brighton, Water-closets and Urinals.—11,931, W. Morrison, New Swindon, Chimney-top.—11,957, S. D. Pochin, London, Iron and Concrete Structures.—11,960, H. T. Crewe, London, Glazing Roofs, &c.

Sept. 4.—11,983, C. J. Henderson, Edinburgh, Warming and Ventilating Buildings.—11,990, R. C. Jones and J. W. Cunningham, London, Sash-fasteners.—11,996, J. Hitch, London, Water Supply to Closets, &c.—12,007, W. Saunders, London, Fastener for Stair Carpets.—12,008, E. Edwards, London. Artificial Stone. Com. by T. Grundmann, Hirschberg.

SPECIFICATIONS ACCEPTED.†

Sept. 5.—2,045, J. Lowley and J. Harold, London, Opening and Closing all the Bolts of a Door simultaneously.—7,305, D. H. Brandon, London, Fire- and Water-proof Material for Roofing, &c. Com. by D. A. Brown, Boston, and C. F. Brigham, Worcester, U.S.A.

Miscellanea.

The New Dock and Railway Works at Preston.—The contract for the new dock works at Preston, and the improvement and deepening of the channel of the river Ribble, from Preston to the point where it falls into the Irish sea, which has just been entered into with the Corporation by Mr. T. A. Walker, of Great George-street, Westminster, will in a few weeks give employment to a large number of labourers and artisans, as it is intended at once to enter upon the varied works included in the contract both at the Preston end, and also along the channel to the mouth of the river, a distance of fourteen miles. Mr. Walker's contract amounts to 439,359*l.*, which includes the diversion of the river at Preston for about a mile in length; the construction of a river-entrance from the docks, with entrance-gates; a tidal basin four acres and three quarters in extent; locks and lock gates; a main dock of forty acres area; together with the construction of training walls along each side of the channel of the river from Preston to the river mouth. The contract is to be completed within a period of five years, or by the 1st of July, 1889. This contract, large as it is, does not include the whole of the intended works under the Act of Parliament which the Corporation have obtained. The dredging of the river will be carried out by the workmen of the Corporation, whilst in addition to Mr. Walker's contract a timber-pond of 25 acres is to be constructed, also graving-docks, coal tips, four large warehouses, hydraulic machinery, and railways round the docks and quays, the aggregate cost of the undertaking when finally completed being estimated at little short of 1,000,000*l.* The width of the proposed new channel at its narrowest point when entering the dock basin and dock at Preston is intended to be 60 yards at the bottom of the slope, with 30 ft. of water at high water spring tides, and 36 ft. of water over the bar at the mouth of the river. Simultaneously with the carrying out of the works, the construction of a new railway from Wigan and Longton to Preston, to be connected with the docks, and also the authorised railway from Preston to Lytham and Blackpool, with a station at the docks, are also to be proceeded with, and it is estimated that the united cost of carrying out these several works during the next three or four years will be upwards of 1,500,000*l.*

The Edinburgh Improvement Trust.—At a meeting of the Edinburgh Improvement Trustees on Tuesday last, the Works Committee recommended that Mr. James Lessels be appointed architect to the Trust, in room of his late father, at the salary of 75*l.*

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

† Open to public inspection for two months from the dates named.

Protecting Timber from the Ravages of Marine Animals.—At the International Forestry Exhibition, Edinburgh, on Tuesday last, Professor M'Intosh, of St. Andrews, delivered a lecture on "The Boring of Marine Animals in Timber, &c." Alluding to the methods of protecting submarine timber from the ravages of such animals, the professor said different kinds of wood were mentioned as being impenetrable by such boring action, but so far none had been successful. There were many preparations for the treatment of the wood before immersion. Soluble bitumen, silicated lime, and various compositions, had each in turn been tried externally; while silicate of lime, creosote, and other fluids had been forced, under great pressure, into the tissues of the woods. The experiments of the Dutch Commissioners, who investigated the matter, had led them to the conclusion that no external protection other than metallic sheathing or the studding of the wood with broad-headed nails would be successful in resisting the attacks of these borers, while the only impregnation they found reliable was creosoting. In conclusion, Professor M'Intosh pointed out that while the Dutch, French, and other Commissions had done material service in regard to the best means of protecting timber from the attacks of borers, the subject was by no means exhausted. On the contrary, it would form a fitting object for research at the marine laboratories, which at last, he was glad to say, were being established on our coasts.

Liverpool Labourers' Dwellings Company, Limited.—Mr. Charles T. Bowring presided on Wednesday at the thirteenth annual meeting of the Liverpool Labourers' Dwellings Company, Limited, held in the company's offices, Union Bank-buildings, 5, Fenwick-street. The report of the Directors, which was unanimously adopted, stated that the demand for cottages had fallen off, and many cottages having remained empty, the rents were considerably reduced; but, although this was done, the directors were glad to state that the gross rents received only showed a diminution of about 10*l.* as compared with last year, and the cottages had been better tenanted. The expenditure showed a decrease of about 30*l.* as compared with last year. The net profit on the year's working was 515*l.* 4s. 6d., and adding to this sum the amount carried forward from last year, 11*l.* 4s. 4d., there was a sum of 526*l.* 8s. 10d. available for dividend. The directors recommended that a sum of 496*l.* 4s. be applied to the payment of a dividend at the rate of three per cent. per annum, and that the balance of 30*l.* 4s. 4d. be carried forward to next year.

New Bank Buildings and Shops at Camberwell.—The London and South-Western Banking Company are erecting a new bank, together with a block of shops, on a portion of the vacant land resulting from the widening of Church-street, Camberwell. The bank buildings are situated in a prominent position immediately opposite Camberwell-green, having a main circular frontage to the green, with an extensive return frontage in Wren-road, 80 ft. in length. The building is faced with Portland stone, rusticated, with an arched entrance in Shap polished granite, at the corner of Church-street and Wren-road. Each floor contains ranges of lofty arched windows with moulded and carved keystones. The four shops, in continuation of the bank buildings eastward, are carried up to the first floor with rusticated Portland stone piers, uniform with the bank, the upper portions of the frontage being in red brick with Portland stone dressings. Messrs. J. & J. S. Edmeston are the architects, and Mr. G. Kynock, of High-street, Clapham, is the contractor, his contract amounting to 11,748*l.*

Geneva.—A Munich window has lately been erected at the east end of the Church of the Holy Trinity, by Messrs. Mayer & Co. It represents in the centre the Crucifixion, on the left the Holy Women at the Sepulchre, and on the right Christ consoling the Women on the way to Calvary. This work is placed in memory of Mr. Henry Christopher Schaëf, of Moinex, Haute Savoie.

An Electric Brake.—A trial of the Walcker electric brake, which is in use in America, was recently made on the tramway between Turin and Piossasio. It is stated that by its means two cars running at a speed of 35km. per hour were stopped in six seconds, and within a distance of 18m. The brake is being shown at the Turin Exhibition.—*The Electrician.*

Franciscan College and Monastery at Peckham.—Adjoining the large Franciscan Church in Peckham Park-road, which was erected a few years ago from designs by Pugin, a new college and monastery, now in course of erection, is fast approaching completion. The building is situated at the north-east side of the clergy-house, connected with the church, and has three main frontages. The principal frontage in Peckham Park-road is 70 ft. in length and 80 ft. in height, containing four floors above the ground line. The materials of the elevation are malm brick, with Corsham stone for cornices, strings, window-dressings, weatherings, and chimney-caps. The whole of the basement is arranged for the *cuisine* department of the college. The ground-floor contains, on one side of the corridor, the refectory, an apartment 20 ft. square, whilst, on the opposite side of the corridor, is the library; and, in continuation, on each side of the corridor, are the students' rooms. The first floor also contains students' rooms on each side of a corridor as in the ground-floor below. The upper floors contain the dormitories. Mr. Burns, of Liverpool, is the architect, and Mr. F. Doherty, of Leyton-square, Peckham, is the contractor. The cost of the college will be about 4,000*l.*

The London Tramway Company's New Depot at Peckham.—On the south side of High-street, Peckham, bounded on the east by Rye-lane, the London Tramways Company are constructing an extensive new depôt, which, with the exception of their terminal establishment at Greenwich, will be the largest of the kind belonging to the company. The site upon which the new buildings are being erected forms a portion of the ancient Basing Manor estate. The property purchased by the Tramway Company for the depôt includes the old Manor House, adjacent to the High-street, which, subsequently to the estate being sold by the Gardyner family, as lords of the manor, was occupied as a public school. Amongst other property acquired by the company are a number of rickety hovels on the east side of Basing-road, the demolition of which, on sanitary grounds, is very desirable. The depôt will cover an area of between two and three acres, with an approach from High-street about 150 ft. in length. The erection of the stables, which are intended to have stalls for about 200 horses, is now in progress, as well as sheds for the cars.

Open Spaces.—We hear that the National Footpath Preservation Society will advocate the purchase of land near towns and villages for public recreation-grounds; and we understand that the Town Council of Lancaster have just paid 5,650*l.* for the purchase of the Giant Axe Field for the benefit of the town. We should like to know the acreage.

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Schools	Egham School Board ...	25*l.*, 15*l.*	October 11th	i.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Two Schools at Newhaven	Newhaven School Brd.	Geo. Fuller	Sept. 16th	xviii.
Brick and Pipe-Sewers, &c.	Willesden Local Board	*Official*	do.	ii.
General Paving Works	Westminster B. of Wks.	do.	Sept. 17th	ii.
Gasfitter's Work	Com. of H.M. Works...	do.	do.	ii.
Bellhanger's Work	do.	do.	do.	ii.
Girders, &c. for Bridge	Midland Railway Co. ...	A. A. Langley, C.E. ...	Sept. 18th	ii.
Coffee Hut, Derby	do.	do.	do.	ii.
Mess-room, &c. Normanton	}			
Waiting-room, Cudsworth	} do.	do.	do.	ii.
Wagon Shop, Grimesthorpe	}			
Painting, &c., Kettering Station	do.	do.	do.	ii.
Timber	Dartford Union	.....	Sept. 19th	xiii.
Granite	do.	.....	do.	xiii.
Public Hall and Coffee-Tavern, Greenwich ...	.....	W. Rickwood	Sept. 20th	xiii.
Public Library, &c.	Swansea Corporation...	H. Holtom.....	Sept. 22nd	xiii.
Repairing Parapet Walls	St. Marylebone Grdns.	H. Saxon Snell & Son	do.	xviii.
Making-up Roads	Hornsey Local Board...	T. de Courcy Meade, C.E.	do.	xiii.
Re-erection of Stables, &c.	Liverpool Corporation	*Official*	do.	xiii.
Crane for Gateshead Quay	Borough of Gateshead	.....	Sept. 23rd	i.
Retort House (Brickwork)	Sheffield Gas Company	J. T. Key	do.	xviii.
Retort House (Ironwork)	do.	do.	do.	xviii.
Police-court and Offices at Stratford	West Ham Local Brd.	*Official*	do.	ii.
Bridge, Marshgate-lane	do.	do.	do.	ii.
House for Medical Officer	South Met. School Bd.	Not stated	do.	ii.
Main Drainage Works	West Bromwich Cor....	*Official*	do.	ii.
Buckhurst Hill Drainage	Epping Union R. S. A.	Lewis Angell, C.E.	Sept. 25th	xiii.
Pipe-sewer	Barking Local Board ...	Brundell & Dawson.....	do.	xviii.
Enlargement of Station, Perth	Perth Gen. Statn. Com.	Blyth & Cunningham...	Sept. 26th	ii.
Medical Superintendent's House, &c., Fulham	Met. Asylums Board ...	A. & C. Harston	do.	ii.
Public Offices, and other Buildings	Widnes Local Board ...	F. & G. Holme	Sept. 29th	xviii.
New Offices, Berwick-street, Newcastle	Tyne Improvment Com.	R. J. Johnson	Sept. 30th	xiii.
Drill Shed, &c., Maryport	Admiralty	*Official*	October 3rd	i.
Stores	Great Western Ry. Co.	.....	October 6th	ii.
Premises, Hackney	Mr. Choppings.....	.....	Not stated	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Applications to be in.	Salary.	Page.
Inspector of Nuisances and Surveyor	Mkt. Har. Un. R. S. A.	Sept. 18th	130*l.* per annum.....	xvi.
Surveyor	Northampton Cor.	Sept. 22nd	200*l.* do.	xvi.
Surveyor	Oldbury Local Board	Sept. 25th	100*l.* do.	xvi.

TENDERS.

For the erection of two houses at Hitchin, for Mr. Wm. Ransom. Mr. J. Shilcock, architect. Quantities by Mr. Henry Lovegrove, 26, Budge-row, E.C.:—

R. Runson	
E. Twelvetrees	£2,967 0 0
W. & A. Cox	2,859 0 0
W. Butterfield	2,764 0 0
S. Bedhouse	2,730 0 0
G. Warren	2,692 0 0
W. Seymour	2,690 0 0
Warren & Bates	2,646 0 0
G. Jeeves & Sons	2,635 0 0
J. W. Willmott	2,622 0 0
G. Stapleton	2,620 0 0
S. Brockett	2,590 0 0
	2,500 0 0

For villa-residence, Coddington-road, Brockley, for Mr. W. Hall. Mr. G. S. Harrison, architect. Quantities by the architect:—

Edgley	£1,270 0 0!
A. White & Co	959 0 0
Eldridge	900 0 0
Leng	887 0 0
Priestly	880 0 0
Best	861 10 0
Amor	846 0 0
Aviss & Son	804 15 0
Mower	829 0 0
Croaker	780 0 0
Holloway	780 0 0
D. D. & A. Brown	771 0 0
Turner Bros.	765 0 0
Robinson & Miller	695 0 0!

For erecting the London Almshouses, Shepherd's-lane, Brixton, for the Corporation of London. Messrs. Davis & Emanuel, architects, 2, Finsbury-circus, E.C. Quantities supplied by Mr. H. P. Foster, 5, John-street, Adelphi, W.C.:—

Colls & Sons, Moorgate-street	£13,300 0 0
J. Mowlem & Co., Westminster	13,000 0 0
Harris & Wardrop, Limehouse	12,274 0 0
T. Rider & Son, Union-street, Boro'	12,248 0 0
Maxwell Bros., Brixton-road	12,058 0 0
G. S. S. Williams & Sons, Thornhill-square	11,970 0 0
W. Bangs & Co., Bow-road	11,964 0 0
J. Grover, Wilton-square, New North-road	11,962 0 0
T. Little, Size-yard, Whitechapel-road	11,898 0 0
E. Conder, Baltic Wharf, Kingsland	11,619 0 0
S. J. Jerrard, Lewisham	11,589 0 0
J. Outhwaite & Son, Upper East Smithfield	11,510 0 0
E. Lawrance & Son, Wharf-road, City-road	11,256 0 0
Holliday & Greenwood, Loughborough Junction	11,151 0 0
Greenwood & Sons, Arthur-street West	11,048 0 0
Mark Gentry, Langthorne Works, Stratford	10,500 0 0

For a house at Guildford, for Mr. W. Wells. Messrs. Peak, Lunn, & Peak, architects. Quantities supplied:—

Colls & Son, Dorking	£2,790 0 0
Pink, Milford	2,782 0 0
Mitchell Bros., Shalford	2,721 2 5
Martin, Wells, & Co.	2,472 0 0
Peters, Horsham	2,469 0 0
Bottrill, Reading	2,458 0 0
Kingerlee, Oxford	2,440 0 0
[Architect's estimate	£2,850 0 0]

For works at Erles Court Farm, Wiltshire. Messrs. Arundel & Tarte, architects, Great James-street, Bedford-row:—

	New Buildings.	Cottages.
Sindall, Cambridge	£679 11 10	£496 1 10
Barrett, Swindon	607 2 2	458 1 10
Wheeler, Swindon	605 13 10	417 5 3
Colborne, Stratton	569 5 0	409 10 0
Beaven, Bristol	560 0 0	395 0 0
Looker, Stratton	541 0 0	385 0 0
Johnson & Manners, London	466 0 0	365 0 0

For parsonage farm, Lyddington. Messrs. Arundell & Tarte, architects:—

	A.*	B.*
Phillips, Swindon†	£1,365 0 0	£1,225 10 0
Beaven, Bristol	1,340 0 0	1,220 0 0
Williams, Swindon‡	1,290 0 0	1,150 0 0
Wheeler, Wantage	1,286 18 5	1,141 14 5
Barrett, Swindon	1,240 3 6	1,111 4 11
Colborne, Stratton‡	1,189 10 0	1,116 0 9
Locker, Stratton§	1,165 10 0	1,037 15 0

* Alternative estimates. † Informal. ‡ Late.
§ Accepted.

For alterations and additions to Nos. 14 and 16, Clapham-road, for Mr. G. F. Cotton. Mr. J. W. Stevens, architect, Dyer's-buildings:—

Hatfield, Clapham	£279 0 0
A. White & Co., Rotherhithe	217 0 0
Lavender & Sons, Clapham	199 0 0
Creed, Loughborough Junction*	194 0 0

* Accepted.

For parochial room for All Saints' Parish, Nottingham. Mr. Frederick Jackson, architect, Nottingham:—

Enoch Hind, Nottingham	£997 0 0
Huskinson & Jefferys, Nottingham	989 0 0
Lynam & Kidd, Nottingham	853 0 0
Bell & Son, Nottingham	807 15 0
Henry Vickers, Nottingham	765 0 0
Thomas Beck, Matlock Bridge	718 19 0
S. & J. Cargill, Nottingham (accepted)	698 0 0

Accepted for residence and stabling at Codsall, for Mr. R. Fryer Morson. Mr. J. R. Veall, architect, Wolverhampton:—

P. Horsman & Co., Wolverhampton	£1,605 0 0

[No competition.]

Accepted for engine stack and boiler at the Royal Seed Establishment, Wordsley, for Messrs. Edward Webb & Sons. Mr. J. R. Veall, architect, Wolverhampton:—

J. Guest, Brettel-lane	£160 0 0

[No competition.]

For six houses in Clayton and Carlton streets, Westgate End, Wakefield, for the Wakefield Equitable Provident Land and Building Society. Mr. Abraham Hart, architect, Thompson's-yard, Westgate, Wakefield. Quantities by the architect:—

Holmes Bros., Lake Lock, Stanley	£899 0 0
J. & J. Mountain, Wakefield	840 0 0
G. Mountain, Wakefield	810 0 0
Richardson & Son, Newton	790 0 0
B. Lockwood, Westgate	785 0 0
T. W. Cawood, Westgate	780 8 0
James Tattersal, Wakefield	772 18 0
W. Clark, Westgate	758 0 6
O. Clark, Westgate	730 9 0
J. W. Woulds, Sandal (accepted)	720 0 0

For the erection of a villa-residence, Green-lanes, on the Bowes Park Estate, for Mr. John J. Hough. Mr. D. Taylor, architect and surveyor, New Southgate. Quantities not supplied:—

J. Harper, Hackney	£1,775 0 0
Yardley & Sons, Wood Green	1,739 0 0
Steven Bros., Seven Sisters-road	1,297 0 0
Kirby & Chase, Hornsey-road	1,290 0 0
T. Scarborough, Wood Green	1,284 0 0
F. Vollor, Wood Green (accepted)	1,258 0 0
T. Brooks, Wood Green	1,240 0 0
[Surveyor's estimate	£1,278 17 0.]

For completion of church at Lismore, co. Waterford, chancel, chapels, &c. Mr. Walter G. Doolin, M.A., architect, Dublin. Quantities by Mr. H. M'Connell:—

Hammond, Drogheda	£6,200	0	0 !
Creedon, Fermoy (accepted)	1,757	0	0
[Architect's pricing	£1,459	0	0]
[Surveyor's pricing	£1,486	0	0]

For interior and exterior and decorations to the Metropolitan Benevolent Societies' Asylum, Balls Pond-road, Islington, N.:—

Roberts	£350	0	0	with lamps.		
	Repairs.			Lamps & Letters.		
Hobson	£239	0	0	£50	0	0
Combes	212	0	0	45	0	0
Hobbs	197	0	0	38	0	0
Dearing & Son*	119	0	0	41	0	0
Goodley	120	0	0	35	0	0
Moody	128	0	0	10	0	0

* Accepted.

For billiard-room for Mr. J. H. Davis, Cressingham House, Carshalton. Mr. Thos. Lockwood Heward, architect, John-street, Bedford-row, W.C.:—

Howe & White, Wallington	£370	0	0
Potter, Sutton	363	0	0
Hazell, Beddington	350	0	0
Smith & Bence, London	347	0	0
Evans, Carshalton	309	0	0
Clarke, Wallington	298	0	0
Aldous, Carshalton (accepted)	250	19	0

For sundry alterations at the Middlesex Music Hall, Drury-lane, for Mr. J. L. Graydon. Mr. Alfred Wright, architect, 190A, Brompton-road, S.W.:—

H. R. Baggs	£573	0	0
Beale	547	0	0
Cook	509	0	0
W. Johnson	490	0	0

For new business premises, East-street, Fleetwood, for Mr. H. J. Rowton. Mr. C. Pearson Shaw, architect. Quantities by the architect:—

J. Jackson, Fleetwood (Excavator, Drainer, and Bricksetter)	£613	3	5
R. Ronson, Blackpool (Carpenter and Ironwork)	910	0	0
J. Johnson, Fleetwood (Mason, &c.)	65	2	9
G. L Seed, Poultin (Slater)	68	0	0
Whiteside & Walmsley, Blackpool (Plasterers)	103	0	0
J. Coulston, Blackpool (Plumber, Glazier, Gasfitter, &c.)	425	0	0

Accepted for pulling down and re-erecting three dwelling-houses in Chapel-lane, Kendal (exclusive of grates and ranges), for Mr. Henry Pickthall, Manchester. Mr. John Stalker, architect. Quantities by the architect:—

C. Gibson (Excavating, Walling, &c.)	£178	0	0
T. Stables (Carpenter and Joiner)	117	0	0
W. Jackson (Plumber and Painter)	34	9	6
J. Hoskinson (Plasterer)	34	5	0

For alterations, &c., at Abbotsford, Burgess Hill, Sussex. Mr. Arthur Loader, architect, Brighton:—

R. G. Lockyer, Brighton	£313	0	0
S. Norman, Burgess Hill	276	0	0
F. A. Wilson, Brighton (accepted)	259	0	0
S. Norman (accepted for water-supply)	149	0	0

For new front to 46, Preston-street, Brighton. Mr. Arthur Loader, architect:—

E. C. Kemp	£320	0	0
W. Hackman	254	10	0
W. Taylor	240	0	0
R. G. Lockyer, Brighton (accepted)	236	0	0

For new wing to house, and new oast-houses, at Frittenden, Kent. Mr. Arthur Loader, architect:—

Baker & Hadley (accepted)	£4,720	0	0

For repairs and alterations at No. 33, Montague-place, Russell-square, for Mr. T. S. Sutton:—

C. Bush	£250	0	0
J. T. Nichols (accepted)	134	14	0

For the erection of the first portion of proposed new buildings at St. Mary's College, Woolhampton, near Reading, Berks. Mr. Frederick A. Walters, architect, 4, Great Queen-street, Westminster, S.W. Quantities supplied by Mr. W. H. Brayshaw:—

Norris	£5,884	0	0
Parmenter	5,560	0	0
Kemp	5,399	0	0
Kimberley	5,110	0	0
Claridge	5,071	0	0
Buckle & Wheeler (accepted)	4,350	0	0

For warehouse, Cousin-lane, E.C., for Messrs. J. & J. Colman. Mr. R. W. Price, architect, 12, Buckingham-street, Adelphi. Quantities by Messrs. Barber, Boxall, & Barber:—

Boyce	£3,480	0	0
Clark & Bracey	3,333	0	0
Nightingale	3,133	0	0
Smith	3,127	0	0
Brass	3,125	0	0
Ashby & Horner (accepted)	3,100	0	0

For reconstructing premises at Hereford, recently destroyed by fire, for Mr. James Morgan. Messrs. Willett & Wakeling, architects:—

H. Welsh	£600	0	0
J. Dair	592	0	0
W. Pritchard	577	0	0
J. Lloyd	552	0	0
J. Rowberry	548	0	0
R. Taylor	542	0	0
E. Powell	506	0	0
W. Bower & Co.	478	0	0
H. Gardner & Co.	420	0	0
H. W. Daniels*	374	0	0

* Accepted, subject to variations and omissions.

For offices and soup-kitchens in Bath-street, Hereford. Messrs. Willett & Wakeling, architects:—

H. Welsh	£942	0	0
Colley	915	0	0
Daniels	843	0	0
Powell	816	0	0
W. Bower & Co.	750	0	0
H. Gardner & Co.	750	0	0
J. Ford	700	0	0
W. Pritchard (accepted)	659	16	0

For the erection of a new parsonage-house and offices at Hemel Hempstead, Herts, for the Rev. G. J. Lacell. Mr. W. A. Fisher, architect, Marlowes, Hemel Hempstead. Quantities supplied:—

W. L. Sear	£1,569	12	0
Miskin	1,537	0	0
Waterman	1,448	0	0
W. Sear	1,443	0	0
Horn	1,382	0	0

For additions to house, Broad-street, Hemel Hempstead, for Mr. G. Rolph. Mr. W. A. Fisher, architect and surveyor:—

W. L. Sear	£169	0	0
Horn	155	0	0
W. Sear (accepted)	146	0	0

Special Notice.—Lists of tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, Strand, W.C., not later than four p.m. on Thursdays.

TO CORRESPONDENTS.

G. P. B.—H. P.—F. J. B.—F. B.—T. N.—J. S. D.—W. St. C. B. (next week).—J. S. P.—R. P. (next week).—J. J. R. (thanks).—National Footpath Preservation Society.—C. D. (shall be attended to).—M. H. J.

All statements of facts, lists of tenders, &c., must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read a public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

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PREPAYMENT IS ABSOLUTELY NECESSARY.

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DOUGLAS FOURDRINIER, Publisher,
Addressed to No. 46, Catherine-street, W.C.

Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

TERMS OF SUBSCRIPTION.

"THE BUILDER" is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum, PREPAID. To countries within the Postal Union, 26s. per annum. Remittances payable to DOUGLAS FOURDRINIER, Publisher, No. 46, Catherine-street, W.C

SPECIAL.—ALTERATIONS in STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same, must reach the Office before TEN o'clock on WEDNESDAY mornings.

PERSONS Advertising in "The Builder," may have *Replies addressed to the Office*, 46, Catherine-street, Covent-garden, W.C. *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and *not* to the Editor.

Best Bath Stone.
WESTWOOD GROUND,
Box Ground, Combe Down,
Corsham Down,
And Farleigh Down.
RANDELL, SAUNDERS, & CO., Limited,
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Box Ground Stone
Is the Best for Use in all Exposed Positions, being a well-known and tried Weather Stone.
50,000 feet cube in stock.
PICTOR & SONS, BOX, WILTS.
[ADVT.

Doulting Freestone and Ham Hill Stone of best quality, in blocks, or prepared ready for fixing. An inspection of the Doulting Quarries is respectfully solicited; and Architects and others are CAUTIONED against inferior stone. Prices, delivered to any part of the United Kingdom, given on application to CHARLES TRASK, Norton-sub-Hamdon, Ilminster. Somerset.—Agent, Mr. E. WILLIAMS, 16, Craven-street, Strand, W.C. [ADVT

Doulting Free Stone
HAM HILL STONE,
BLUE LIAS LIME
(Ground or Lump),
For prices, &c., address S. & J. STAPLE, Quarry Owners, Stone and Lime Merchants, Stoke-under-Ham, Ilminster. [ADVT.

Asphalte.—The Seyssel and Metallic Lava Asphalte Company (Mr. H. Glenn), Office, 38, Poultry, E.C.—The best and cheapest materials for damp courses, railway arches, warehouse floors, flat roofs, stables, cow-sheds and milk-rooms, granaries, tun-rooms, and terraces. [ADVT.

Asphalte.
Seyssel, Patent Metallic Lava, and White Asphaltes.
M. STODART & CO.
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No. 90 Cannon-street, E.C. [ADVT.

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MANUFACTURERS OF IMPROVED
STEAM AND HOT-WATER APPARATUS,
FOR WARMING AND VENTILATING
Private Houses, Churches, Schools, Hospitals, Manufactories, Greenhouses, &c.
OFFICES AND SHOW-ROOMS:—
No. 34, UPPER GLOUCESTER PLACE, DORSET SQUARE, LONDON, N.W.
And at DUBLIN, BELFAST, GLASGOW, and NEWCASTLE.
Illustrated Pamphlet on "Heating" post free.

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DAYLIGHT REFLECTORS OF EVERY DESCRIPTION,
ALSO
ARTIFICIAL LIGHT REFLECTORS.

WHY BURN GAS?—CHAPPUIS' REFLECTORS DIFFUSE DAYLIGHT.—They are exclusively adopted by and fitted at Buckingham Palace, all H.M. Government Offices, Houses of Parliament, H.M. First Commissioner of Works, the Metropolitan Board of Works, British Museum, South Kensington Museum, Royal Institution, Guildhall Museum, on board H.M. Ships, also Railway Companies' Offices, Hospitals, Institutions, Banks, Insurance Offices, Manufactories, Private Houses and generally from Noblemen's Mansions to Artisans' Workshops. 30,000 in use in London alone. Patronised by leading Architects, Engineers, Contractors, &c., &c.

N.B.—For Prospectuses and Diagrams, address Stamped Envelope to

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NOTICE.—The POLYGONAL REFLECTOR (Latest Patent) FOR ARTISTIC and PICTURE GALLERIES.
Its construction allows of the angle of light being readily altered so as to reflect in any desirable direction.

N.B.—On View at HEALTH EXHIBITION (Eastern Gallery).

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PARIS - - - 1878
YORK - - - 1879
EXETER - - 1880
MELBOURNE 1881
BRADFORD - 1882

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SUN BLINDS AND AWNINGS,
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WROUGHT AND CAST IRONWORK, &c., &c.

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ADDRESS—
CANAL HEAD FOUNDRY AND ENGINEERING WORKS,
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LONDON OFFICE: 20, BUCKLERSBURY, E.C.

CLARK, BUNNETT, & CO.

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PUMPS, BY STEAM OR HYDRAULIC POWER.
HYDRAULIC CRANES.

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90, QUEEN STREET, AND RATHBONE PLACE, LONDON.

Mausoleums.
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Contracts in Town or Country. Special Men kept for all kinds of Work.
One of the finest Stocks in London for selection.
Portland Stone Sawn or Worked for the Trade.
To Architects.—Drawings receive special and prompt attention. Estimates free.

J. & A. CREW Market and Thornley Wharves, Regent's Park Basin.
Postal Address,—*Cumberland Market, London, N W.*
NOTE.—Five minutes from Gower-street or Portland-road Stations.

MARBLE & SLATE Slabs, Shelves, Counters, Lavatories, Chimney-pieces, Fenders, Tile-hearths, Floors
COLOURED Marble Linings, Tables, Coil Tops, &c., &c.
Some special qualities in stock.
GRANITE Tombs, Columns, Pilasters, Kerbs, Worked and Polished, of every description.

OWENS COLLEGE, MANCHESTER (VICTORIA UNIVERSITY).—ENGINEERING COURSE. A detailed Syllabus of the COMPLETE COURSE in ENGINEERING will be forwarded on application. The next Session commences on the 7th of OCTOBER.
J. HOLME NICHOLSON, Registrar.

THE DECORATORS' CLUB (19, Howland-street, Fitzroy-square, W.) has been formed to SUPPLY a WANT felt by Painters and Decorators, viz. the Possession of Premises for Social and Rational Recreation, and where Employers requiring Assistance can apply and depend on obtaining respectable, experienced Workmen.—Apply personally or by letter to Secretary.

MODELS of BUILDINGS and ESTATES. MODELS of Civil Engineering Works. MODELS in Block or in Section. Made for Effect or Illustration.
F. H. McLauchlan, 19, Dalyell-rd. Stockwell, S.W.

DESIGNS and PERSPECTIVES in Ink or Colour PREPARED by a well-known Designer and Draughtsman. Special competition terms. Competitors advised by post.—MURIS, 42, Theobald's-road, W.C.

IRON ROOFS, BRIDGES, &c.—Designs Furnished, or Worked out in Detail, from Architects' Sketches by
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PILE DRIVERS AND CONTRACTORS,
No. 2, Plough-road, Rotherhithe, S.E.
(REMOVED FROM 4 and 5, THREE CROWN SQUARE, E.C.)
City Office: 13, King-street, Cheapside, E.C.

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President.—VISCOUNT HAMPDEN.
All the advantages of a home and club. Subscription, One Guinea a year, or 6s. per quarter.
Bedroom, 7s. per week, including use of all common rooms.
For Prospectus, apply to Secretary, 156, Ossulston-street, Euston road, N.W.

IMPERIAL FIRE INSURANCE COMPANY (established 1803).
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Capital, 1,600,000*l.* Paid up and invested, 700,000*l.*
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Persons insured about 800,000.
Names of Workmen not required; premium charged on total wages at 2s. per cent. and upwards.
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Applications for Agencies invited.
S. STANLEY BROWN, General Manager.

THE BUILDERS' ACCIDENT INSURANCE, LIMITED.

Particular attention is called to the STRICTLY MUTUAL character of this Office, which is established for the benefit of the Trade.

At the Annual Meeting, on the 30th July, a further Bonus of 12½ per cent. was declared on all premiums paid during the year ending the 31st May, 1884, payable to all Insurers on renewal of Policies.

Intending Insurers are requested to apply for prospectus to the secretaries as under:—
Mr. E. S. HENSHAW, 27, King-street, Covent Garden, W.C.
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TO ARCHITECTS, Surveyors, and Auctioneers.—An Architect and Surveyor, established two years in a rapidly rising watering town, one hour from London, wishes to DISPOSE of his BUSINESS. Five building estates in hand. Auctioneering might with advantage be added. Net income last year 300*l.* A sure fortune to a good man. Satisfactory reasons for selling. Price, to include twenty-one years' lease of new and first-rate offices at low rent, furniture, fixtures, boards, and goodwill £600*l.* Open to offer.—ARCHITECT, 615, Messrs. Deacon's, Leadenhall-street, E.C.

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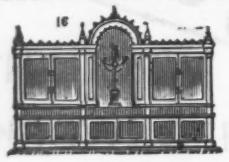

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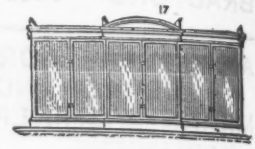

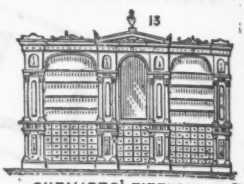

CHEMISTS' FITTINGS

NATIONAL ART TRAINING SCHOOL,

SOUTH KENSINGTON.

VISITOR.—EDWARD J. POYNTER, Esq. R.A.

DIRECTOR.—T. ARMSTRONG, Esq.

PRINCIPAL.—JOHN C. L. SPARKES, Esq.

The WINTER SESSION will commence on WEDNESDAY, the 1st of OCTOBER.

Public Art Classes, in connexion with the Training School, open to the public on payment of fees, are established for students of both sexes. The studies comprise Drawing, Painting, and Modelling, as applied to ornament, the figure, landscape, and still life.

Candidates for admission, who are not already registered as students of the school, must pass a preliminary examination in free-hand drawing of the Second Grade.

Special admission examinations will be held at the School at frequent intervals during the session.

The first examination for the forthcoming session will be held on TUESDAY, the 30th SEPTEMBER, at 11.45 a.m. and 6.45 p.m.

Application for information as to fees and for admission should be made in writing to the Secretary, Science and Art Department, or, on and after the 1st OCTOBER, personally, to the Registrar, at the School, Exhibition-road, South Kensington, S.W.

By order of the Lords of the Committee of Council on Education.

THE HERKOMER ART SCHOOL,

BUSHEY, HERTS.

Students wishing to join the Herkomer School at Bushey must send in a study in black and white of the nude figure for approval between the 15th and 30th SEPTEMBER.

The School re-opens on the 6th OCTOBER, 1884. For full particulars apply to the Secretary at the School.

TO ARCHITECTS, SURVEYORS, and

other PROFESSIONAL MEN.—OFFICES TO BE LET, in Old Bond-street, in a prominent position at the corner of Piccadilly, consisting of three rooms on the second floor.—For further particulars apply to LUMLEYS, Land Agents and Auctioneers, 22, St. James's-street, S.W.

PARTNERSHIP.—An Architect, who has

executed large works abroad, and supervised others in England, having returned to London, desires to PURCHASE a PARTNERSHIP, and with this view would accept a Position as MANAGER for the present, if preferred.—Box 182, Office of "The Builder."

PARTNERSHIP.—A Young Gentleman,

with a small sum at his command, is desirous of obtaining a JUNIOR PARTNERSHIP with an established Architect. Ten years' practical experience in country and Town. Is prepared to work hard, and has a small connexion of his own.—Address, Box 193, Office of "The Builder."

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PUPIL, moderate premium, in an Architect's Office in the City. References exchanged.—ARCHITECT, at Horncastle's Central Advertisement Offices, Cheapside.

AN ARCHITECT carrying on an old-esta-

blished London practice wishes to meet with a well-educated YOUTH, as PUPIL, for four years. A nominal premium to an eligible lad. Can reside with Advertiser in the suburbs if desired.—Box 192, Office of "The Builder."

A VACANCY occurs in the Office of a

Builder and Contractor for a well-educated Youth as PUPIL. To one just leaving School it affords a good opportunity of learning the business.—Apply to R. PINK, Steam Joinery Works, Milford, Surrey.

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nent ASSISTANT, who can take off. State salary and experience.—Box 252, Office of "The Builder."

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rarily, the services of a competent DRAUGHTSMAN, with a thorough knowledge of iron construction.—State qualifications, experience, and salary required, Box 253, Office of "The Builder."

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A SURVEYOR is REQUIRED for the Borough of Northampton to perform the usual Duties in reference to the Management of the Municipal Estate, the Work of the Urban Sanitary Authority (including the Northampton Improvement Acts), and the General Business of Surveyor and Architect to the Corporation.

The salary will be 200*l.* per annum.

No private practice allowed.

Further details of the duties may be obtained at the Town Clerk's Office if wanted.

Applications may be addressed to the Town Clerk, endorsed "Surveyorship," on or before the 22nd of SEPTEMBER next.—By order,

WM. SHOOSMITH, Town Clerk.

August 29th, 1884.

OLDBURY LOCAL BOARD of HEALTH.

WANTED, a competent SURVEYOR, to devote the whole of his time to the service of the above Board.

Salary, 100*l.* per year.

Applications, stating age, experience, and enclosing five recent testimonials, to be sent to the undersigned, endorsed "Application for Surveyorship," not later than the 25th inst.—By order,

WM. SHAKSPEARE, Clerk.

Board-room, Oldbury, Sept. 8, 1884.

BOOKKEEPER WANTED. Must write

a good hand, and thoroughly understand bookkeeping by double-entry. One that has been in the cement trade preferred.—Applications, in own handwriting, stating full particulars, qualifications, late employment, salary required, &c. to be addressed to Box 249, Office of "The Builder."

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Only recruits knowing a trade (Carpenters, Smiths, Masons, &c.) are enlisted in this corps. While serving, in addition to military duties, they practise these trades or learn others, such as Surveying, Telegraphy, Drawing, Photography, while many Non-commissioned Officers are employed as Foremen of Works on barracks and fortifications. EMPLOYERS WANTING a MAN of established character to fill any particular vacancy to apply to Capt. E. BLUNT, Adjutant, R.E. Brompton Barracks, Chatham.

MARKET HARBOROUGH UNION.

RURAL SANITARY AUTHORITY.

APPOINTMENT OF INSPECTOR OF NUISANCES AND SURVEYOR.

Notice is hereby given that the above Authority will, at a Meeting to be held on the 26th day of SEPTEMBER next, proceed to the Appointment of a competent Person to fill the above Offices.

The duties will be those comprised in the Public Health Act, 1875, and the Orders of the Local Government Board, and the person appointed will have to devote his whole time to such duties.

Private practice as Engineer, Surveyor, or Architect will not be allowed.

Area 58,643 acres. Population at the last census, 10,845.

The salary will be 110*l.* as Inspector of Nuisances, and 20*l.* as Surveyor, to include all expenses connected with the fulfilment of the duties.

The appointments will be in the first instance for one year only, and as Inspector subject to the approval of the Local Government Board.

Applications, stating age, and previous employment, accompanied by not more than three testimonials of recent date, to be sent to me, marked "Application for Inspector of Nuisances, &c." on or before the 18th day of SEPTEMBER next.

Candidates need not attend unless written to.

By order,

C. BURGOINE,

Clerk.

August 29th, 1884.

ROAD INSPECTOR REQUIRED, to

Superintend Men and Horses employed, and Materials used, in Repairing and Cleansing the Roads, &c. in the parish of Battersea.

Applicants must be between 25 and 35 years of age, and able to write.

Those having a previous knowledge of parish and contractor's work preferred.

Wages 35*s.* per week.

Applications, with testimonials, to be delivered not later than SATURDAY, the 20th of SEPTEMBER, to Mr. J. T. PILDITCH, Surveyor, Stone-yard, Bridge-road West, Battersea, S.W.

September 9th, 1884.

BUILDER'S CLERK WANTED, for the

country. Prime cost, general routine, and a good writer.—Apply by letter, stating terms, &c. to A. care of Mr. Banister, 3, Pinner's-court, Old Broad-street.

PLASTERER'S Modeller and Designer.—

WANTED, a first-class. One who understands moulding and casting in plaster well.—Apply, THOS. BASSETT & SONS, Sherbourne-street, Birmingham.

FOREMAN of Yard Labourers WANTED,

and CARMAN to drive a team. Must be used to dock work.—Apply at Wilton Works, New North-road, from Ten to Twelve Monday morning.

YOUNG MAN WANTED for a Timber

Yard on an estate in Shropshire. One capable of measuring up work and keeping the men's time, wages accounts, &c.—Apply, stating where last employed, wages expected, &c. to W. WYATT, Ellesmere, Salop.

STAIRCASE HAND.—WANTED, for the

country, first-class STAIRCASE HAND. Must be also an experienced Joiner for ordinary work and used to hard wood. References as to work done required.—Box 250, Office of "The Builder."

SAWYER (CIRCULAR-SAW BENCH).

WANTED, a competent and steady MAN. Must be able to sharpen his own saws.—G. E. HAWES, Steam Joinery Works, Duke-street, Norwich.

PLUMBER WANTED; also a Man used

to ELECTRIC BELL work.—Apply, W. W. 1, Evelina-road, Nunhead.

TO TERRA-COTTA BURNERS and

SETTERS.—WANTED, a thoroughly good MAN to set and burn best buff Architecural Terra-Cotta.—Apply, stating wages required and where last employed, to CANDY & CO. Limited, Marland Terra-Cotta Works, Torrington, Devon.

APPRENTICE.—WANTED, by a Builder

in the Country, about ten miles out, to Learn the Trade of Carpenter and Joiner. Quiet and comfortable home for steady youth. Premium required.—Replies to be addressed Box 205, Office of "The Builder."

WORKING FOREMAN of PAINTERS.

WANTED, by a West End firm, a sober and industrious MAN, experienced in first-class work and managing men.—Address, stating age, wages, last employment, and general capabilities, to Box 251, Office of "The Builder."

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AND

ARCHITECTURAL STUDIO.

(LLOYD & CO.)

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Managing Director, EDWD. H. LLOYD, Architect and Surveyor.

Cheques crossed LLOYDS, BARNETTS and BOSANQUETS.

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The LARGEST, BEST and MOST COMPLETE ORGANISATION for the prompt and efficient preparation of all work usually required by the Profession, as: Surveys; Designs; General, Working, and Detail Drawings; Specifications; Quantities; Competition Work; Perspectives in Etching or Colour; Tracings and Mountings of every description; Plans, &c. on Deeds; Law Writing; Lithoing Bills of Quantities; Photo-Lithography; Photo-Zincography; Photography; Ferro-Prussiate Process; Letterpress Printing; Illumination; Heraldic Work.

Strainers, Frames and all Architects', Surveyors' and Engineers' Materials supplied at lowest prices. Estimates by return of post on receipt of full particulars.

A FIRST-RATE STAFF, upon whose ability the Profession can rely with confidence, engaged by DAY and NIGHT.

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COPTHALL HOUSE, TELEGRAPH-STREET, MOORGATE-STREET, E.C.

Architectural and Engineering Drawings. Perspectives, either Coloured or Etched.

Tracings of every description made.

Designs prepared in every class of Building, and Decoration in every style. Working Drawings made from Rough Sketches, &c.

JOHN B. THORP, Architect.

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